Guidance on Awards of Grants to Indian Tribes under Section 106 of the Clean Water Act

For Fiscal Years 2007 and Beyond

United States Environmental Protection Agency
Office of Water
Office of Wastewater Management
EPA 832-R-06-003

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Abbreviations and Acronyms

AIEO: American Indian Environmental Office
ANA: Administration for Native Americans
ARARs: Applicable or Relevant and Appropriate Requirements
BIA: Bureau of Indian Affairs
BOR: Bureau of Reclamation
CALM: Consolidated Assessment Listing Methodology
CFR: Code of Federal Regulations
CSO: Combined Sewer Overflow
CWA: Clean Water Act
CWA Section 106: Grants for Pollution Control Programs
CWA Section 303: Water Quality Standards and Implementation Plan
CWA Section 305: Water Quality Inventory
CWA Section 319: Nonpoint Source Management Programs
CWA Section 401: Certifications
CWA Section 404: Permits for Dredged or Fill Material
CWA Section 504: Emergency Powers
CWA Section 518: Indian Tribes
DO: Dissolved Oxygen
DOC: Dissolved Organic Carbon
DOI: United States Department of the Interior
DQO: Data Quality Objective
EDAS: Ecological Data Application System
EPA: United States Environmental Protection Agency
FOIA: Freedom of Information Act
FY: Fiscal Year
GAP: General Assistance Program
GASB: Governmental Accounting Standards Board
GIS: Geographic Information System
GPRA: Government Performance and Results Act
IT: Information Technology
ITEP: Institute for Tribal Environmental Professionals
MOA: Memorandum of Agreement
MOU: Memorandum of Understanding
MS4: Municipal Separate Storm Sewer System
MTBE: Methyl Tertiary Butyl Ether
NEIEN: National Environmental Information Exchange Network
NHD: National Hydrography Dataset
NPS: Nonpoint Source
NPDES: National Pollutant Discharge Elimination System
NRCS: Natural Resources Conservation Service
OEP: Office of Environmental Protection
OMB: Office of Management and Budget
ONRW: Outstanding National Resource Waters
OST: Office of Science and Technology
OWM: Office of Wastewater Management
OWOW: Office of Wetlands, Oceans, and Watersheds
PART: Program Assessment Rating Tool
POTW: Publicly Owned Treatment Works
PPG: Performance Partnership Grant
QA: Quality Assurance
QAPP: Quality Assurance Project Plan
QC: Quality Control
RA: Regional Administrator
SOP: Standard Operating Procedure
SS: Suspended Solids
STORET: Storage and Retrieval
TAS: Treatment in a Manner Similar to a State
TEAs: Tribal Environmental Agreements
TMDL: Total Maximum Daily Load
TDS: Total Dissolved Solids
TKN: Total Kjeldahl Nitrogen
TSS: Total Suspended Solids
USDA: United States Department of Agriculture
USGS: United States Geological Survey
WAM: Watershed Analysis and Management
WATERS: Watershed Assessment, Tracking, and Environmental Results
WPDGs: Wetland Program Development Grants
WQI: Water Quality Indicators
WQS: Water Quality Standards

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Notice

This document discusses requirements contained in the Clean Water Act and its implementing regulations. The reader is directed to the statute and the regulations for a full and complete statement of those requirements. Tribes are encouraged to consult with their tribal attorney general or equivalent regarding the application of these requirements to tribal activities.

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Executive Summary

The *Guidance on Awards of Grants to Indian Tribes under Section 106 of the Clean Water Act* is intended to help tribal water quality program managers, staff, and other tribal environmental decision makers design and implement effective and successful water quality programs. The guidance also provides United States Environmental Protection Agency (EPA) regions with a framework of procedures and guidelines for awarding and administering grants to federally recognized tribes under the authority of Section 106 of the Clean Water Act (CWA) for fiscal year (FY) 2007 and subsequent years. The guidance is effective for grants issued in FY 2007 and beyond.

The guidance seeks to help tribal water quality programs at various levels of sophistication and development. For new programs, it provides models for successfully initiating and developing a water quality program. For tribes with well-established programs, it contains additional water quality protection activities to consider. To meet the needs of tribes at all levels of development, the guidance presents basic steps a tribe can take to collect the information it will need to make effective decisions about its water quality program.

In addition, the guidance outlines new reporting requirements and data expectations for all tribal programs receiving Section 106 funds. The new reporting requirements will help tribes to collect critical data and information for effective management of their water quality programs. They also will help EPA measure environmental results of the Section 106 Tribal Program and comply with the Government Performance and Results Act (GPRA) and other federal requirements. In the reports that tribes are required to submit as set forth in their CWA Section 106 work plan, tribes will be required to include: a description of identified needs, goals, and objectives of their monitoring programs; a description of sampling methodology and parameters sampled; and a narrative account detailing the types of water sampled, sampling procedures, data summaries, and the tribe's interpretation of both the data and the assessment methodology used. Based on their capabilities, tribes are also required to include water quality data for up to nine parameters: dissolved oxygen, pH, water temperature, total phosphorus, total nitrogen, turbidity, *E. coli* or enterococci, macroinvertebrates, and basic habitat information.

The guidance presents three approaches to implementing tribal water quality programs. Recognizing that tribal water quality programs have different program goals, EPA has designed flexible approaches that can accommodate these differences. A tribe may adopt any of these approaches or a combination of them. The three approaches are:

Nonregulatory Approach. This approach is appropriate for tribes that can most successfully achieve their environmental goals through nonregulatory approaches for controlling, preventing, and eliminating water pollution, and does not require the development of enforceable standards. It provides a framework for achieving results through voluntary and collaborative activities, with an emphasis on nonpoint source (NPS) control, non-structural management measures, and source water protection. It focuses on nonregulatory aspects and does not address other enforceable components that also may be part of implementing a voluntary or collaborative program. The programs supported under this approach will provide the data, tools, and management infrastructure necessary to make informed decisions about the best ways of improving tribal water quality (see chapter 5).

Tribal Law Water Quality Protection Approach. This approach for environmental decision making is based on a tribally defined environmental regulatory program. It is intended for tribes that are not interested in pursuing federally approved water quality standards (WQS) authority, but that would nonetheless like to develop mechanisms under tribal law to protect water quality. This approach gives tribes the option of pursuing standards and goals that can be adopted under tribal law. The standards also will help tribes identify impaired water bodies, propose solutions, and develop water quality reports that meet EPA's reporting requirements. Under this option, tribes will use tribal law to protect water quality. Because the approach relies on tribal law, the guidance does not address it in detail (see chapter 6).

EPA-Approved Water Quality Protection Approach. This approach is designed for tribes that want to pursue eligibility for establishing EPA-approved WQS, which will serve as the regulatory basis for water quality pollution controls, including CWA Section 401 certifications and National Pollutant Discharge Elimination System (NPDES) permits. It requires tribes to apply to EPA for program authorization for WQS. This approach will lead to the development of tribal WQS programs with authority and functions similar to state programs. EPA will continue to have responsibility for administering and enforcing other provisions of the CWA. If a tribe elects not to pursue authorization for the NPDES program, EPA will continue to administer and enforce it (see chapter 7).

Chapter 1: Introduction

Purpose of this Guidance

The Clean Water Act (CWA) of 1972 was developed to address growing environmental and public health concerns related to water pollution. The Act created mechanisms to regulate discharge of pollutants and to ensure continuing water quality. The United States Environmental Protection Agency (EPA) is the primary federal agency responsible for administering the CWA. States also may apply to EPA to administer some of the activities of the CWA. Section 518(e) of the CWA authorizes EPA to treat federally recognized tribes in the same manner as states (TAS). This allows eligible federally recognized tribes to address water quality issues, including the development of their own water quality programs and standards. Funding for these activities is available through grants authorized by Section 106 of the CWA.

The *Guidance on Awards of Grants to Indian Tribes under Section 106 of the Clean Water Act* is intended to help tribal water quality program managers, staff, and other tribal environmental decision makers design and implement effective and successful water quality programs. The guidance also provides EPA regional offices with guidelines for awarding and administering grants to federally recognized tribes under the authority of Section 106 of the CWA for fiscal year (FY) 2007 and subsequent years. In FY 2007 and beyond, EPA regional offices will use this guidance in the award and administration of tribal 106 grants. Annual regional CWA Section 106 funding opportunity announcements will contain specific information on how each regional office will use the guidance to make grant determinations.

The guidance seeks to help tribal water quality programs at various levels of sophistication and development. For new programs, it provides models for successfully initiating and developing a water quality program. For tribes with well-established programs, it contains additional water quality protection activities to consider. To meet the needs of tribes at all levels of development, the guidance presents basic steps a tribe can take to collect the information it will need to make effective decisions about its water quality program.

In addition, the guidance outlines new reporting requirements and data expectations for all tribal programs receiving Section 106 funds. The new reporting requirements will help tribes collect critical data and information for effective management of their water quality programs. They also will help EPA measure environmental results of the Section 106 Tribal Program and comply with the Government Performance and Results Act (GPRA) and other federal requirements.

This document discusses the process of developing a water quality program. You should refer to this document as you develop or refine your water quality program and as you revise or incorporate new types of projects into your program. As your program develops, you can also use the guidance to help make sure that your program continues to meet applicable requirements.

Section 106 Tribal Program Background

Many tribal environmental programs receive some or all of their funding to implement and maintain water quality protection activities through Section 106 grants. Section 106 authorizes EPA to award federal grants to assist tribes, states, and interstate agencies in administering programs for the prevention, reduction, and elimination of water pollution, "water quality programs." EPA sets aside a portion of the total Section 106 funds appropriated by Congress to fund tribal water quality programs.

The Section 106 set-aside funds for tribes are allocated to the EPA regions based on the Section 106 tribal allotment formula adopted by EPA for FY 1998 and beyond. Each region then makes Section 106 grant awards to eligible tribes consistent with statutory limitations, EPA regulations, and EPA guidance. Since 1995, Section 106 funding for tribes has increased from $3 million to $25 million a year.

Section 106 tribal grants are used to fund a wide range of water pollution control activities, including:

- Water quality planning, assessments, and studies
- Ambient monitoring
- Community outreach and education activities
- Source water, surface water, ground water, and wetland protection
- Nonpoint source (NPS) control activities (including NPS assessment and management programs)
- Development of water quality standards (WQS)
- Development of watershed-based plans
- Development of total maximum daily loads (TMDLs)
- Data management and reporting

Need for this Guidance

This guidance has been developed in response to the need for a unified guidance that helps tribes develop and implement water quality programs and defines what EPA expects from tribal water quality protection programs. EPA recognizes the importance of strong tribal water quality protection programs and the EPA-tribal government relationship that supports tribes in implementing their water quality protection programs. To help strengthen tribal water quality protection programs, this guidance provides an overview of programmatic and technical requirements, discusses some common considerations across programs, and provides links to technical resources available to develop tribal programs. To help strengthen EPA-tribal government relationships, the guidance defines expectations for tribes receiving Section 106 grants and explains how these expectations align with EPA's national goals and objectives. The guidance also provides EPA regions with a vehicle to use in evaluating work plans and budgets.

Although many tribes are implementing successful water quality programs using Section 106 grants, it has been difficult for EPA to report national results for the Section 106 Tribal Program. Because of a lack of national tribal guidance on data collection and data reporting, EPA lacks comparable data across tribal programs that can be used to show national improvement in water pollution control on Indian reservations. This has become an increasingly critical problem as the emphasis on demonstrating results for all governmental agency programs has increased. One of the goals of this guidance is to make it possible to aggregate data in a way that allows EPA to assess national results associated with the Section 106 Tribal Program.

The guidance provides a framework for evaluating program results and more clearly defines expectations and requirements for tribal Section 106 grant recipients. In addition to information on strategies for collecting and managing data, working with your regional EPA office, and specific reporting requirements, this guidance contains numerous links to other resources that may be useful as you establish or develop your program. The framework of the guidance is based on three approaches that tribes can use to develop their water quality programs and includes programmatic and reporting requirements. (Chapter 2 provides more information on each approach to developing a water quality program.)

EPA recognizes the diversity of tribal water quality programs. By describing three approaches to water quality program development in this guidance, EPA has attempted to accommodate this diversity and offer a framework that tribes can use to develop and implement a water quality program. The guidance explains how results from each type of program will connect to EPA's strategic plan and will give EPA an overall picture of how the Section 106 Tribal Program is improving water quality on Indian reservations.

St. John River Headwaters. Photograph courtesy of Fred Corey, Micmac Tribe.

GPRA, PART, and Environmental Results

The Government Performance and Results Act (GPRA), Public Law 103-62, requires federal agencies to set strategic goals, measure performance, and report on the degree to which they met their goals. GPRA requires each federal agency to develop strategic plans to cover a period of at least 5 years and to include the agency's mission statement, the agency's long-term strategic goals, and information on how the agency intends to achieve those goals. Activities conducted by individual programs within agencies must correspond to agency priorities described in the strategic plans. Under GPRA, strategic plans are the starting point for agencies to set annual goals for programs and to measure their performance in achieving those goals.

The Office of Management and Budget (OMB) reviews programs within agencies to evaluate performance using the Program Assessment Rating Tool (PART). During PART reviews, OMB evaluates the measurement and reporting of program results, outcomes, and performance to determine whether a program is achieving its strategic and annual goals. EPA relies on program evaluations and analyses, including PART, to inform decisions, design effective strategies, and adjust approaches to improve results. EPA senior managers use the results of PART during the budget process to identify needs for program improvement, justify resource requests, and guide decisions.

EPA's Strategic Plan

EPA's 2003-2008 Strategic Plan describes the programmatic and quantitative measures for improving water quality nationwide and sets out five long-term goals for the next 5 years. The focus of the strategic plan is to achieve measurable environmental results. The plan includes strategic targets that EPA uses to track progress quantitatively. The strategic plan is available online at www.epa.gov/ocfo/plan/2003sp.pdf. The objectives and sub-objectives associated with Goal 2, Clean and Safe Water, address issues that apply to state and tribal water quality programs. Objective 4.3, associated with Goal 4, also contains elements that apply to water quality programs.

Tribes and intertribal consortia, as recipients of EPA grant funds, play an integral part in achieving EPA's objectives and sub-objectives and in demonstrating environmental results. EPA uses the information that tribes and intertribal consortia provide as a basis for linking the Agency's actual expenditures with EPA's results-based accomplishments or outcomes.

Objectives and Sub-Objectives of EPA's Goal 2 – Clean and Safe Water

Objective 2.1: Protect Human Health
Sub-objective 2.1.1: Water Safe to Drink
Sub-objective 2.1.2: Fish and Shellfish Safe to Eat

Objective 2.2: Protect Water Quality
Sub-objective 2.2.1: Improve Water Quality on a Watershed Basis
Sub-objective 2.2.2: Improve Coastal and Ocean Waters

Objective 2.3: Enhance Science and Research
Sub-objective 2.3.1: Apply the Best Available Science
Sub-objective 2.3.2: Conduct Leading-Edge Research

Means and Strategies for Achieving Goal 4, Objective 4.3 – Protect, Sustain, and Restore the Health of Natural Habitats and Ecosystems

- Protect and restore ecosystems
- Increase wetlands
- Improve the aquatic health of the Chesapeake Bay ecosystem
- Improve the aquatic health of the Gulf of Mexico ecosystem

Tribal Program Options and Structure of the Guidance

This guidance discusses the development and implementation of successful tribal water quality programs using Section 106 funding. An effective tribal water quality program should include common activities in three areas. These areas are:

- Program initiation, planning, and administration
- Monitoring, data management, and data assessment and analysis
- Reporting

Program initiation, planning, and administration are discussed in chapter 3. Chapter 4 addresses monitoring, data management, and data analysis and assessment. Chapter 8 lays out reporting and data requirements associated with Section 106 tribal grants. The chapter covers basic data requirements for water quality reporting and expectations and options for developing and submitting reports.

EPA recognizes that tribal programs may have different levels of sophistication and different water quality protection goals. To address these differences, EPA has suggested three options or approaches to developing water quality programs that can accommodate different types of tribal goals:

1. A nonregulatory approach, which uses voluntary and collaborative activities such as community education and outreach to achieve environmental results. This approach can focus on the nonregulatory components of NPS control, watershed-based plans, water quality protection, and restoration projects.

2. An approach that relies on tribal ordinances, codes, water quality standards, or other standards recognized by a tribe to protect water quality on Indian reservations.

3. An EPA-approved water quality protection approach designed for tribes that want to pursue eligibility for the purpose of implementing EPA-approved WQS and Section 401 certification. Tribal WQS approved by EPA would provide a basis for NPDES permit and enforcement action to protect water quality. Tribes also may apply to implement the NPDES permit and enforcement program.

All three approaches rely on the development of tribal water quality protection goals specific to tribal water bodies.

All three approaches will allow tribes to advance the objectives and sub-objectives of EPA's strategic plan and will lead to improved environmental results; the Agency does not endorse any one approach above the others. The approaches are not discrete and may overlap as tribal programs develop. Chapter 2 offers more information on each approach. Chapters 5, 6, and 7 discuss each approach in detail.

Structure of the Guidance's Chapters

Chapters 3 through 8 are divided into three program activity subsections:

- **Fundamental program activities** establish the foundation for a successful program. These program activities will help you identify water quality goals and objectives for your program.
- **Intermediate program activities** will build the tribal water quality program and advance it towards its water quality goals and objectives.
- **Mature program activities** will enable tribes to achieve the goals and objectives of their programs as well as develop new water quality goals and objectives.

Figure 1 shows the structure of the guidance's chapters.

EPA anticipates that tribes will move from fundamental to intermediate and mature program activities over several years and recognizes that some activities will occur many years in the future. In addition, all activities will not progress at the same pace, and a tribe may not implement all activities at once, so different program areas may be at various levels of maturity. Finally, because program capabilities, program priorities, and levels of experience differ among tribes, EPA does not expect that mature activities will occur at the same rate for all tribes. EPA does expect that all tribes will develop more sophisticated programs over time and will make progress toward mature program activities, but the rate of progress may vary from tribe to tribe and will be determined through negotiations between tribes and the appropriate EPA regional office on a case-by-case basis. Funding decisions will also be negotiated between tribes and the appropriate EPA regional office on a case-by-case basis and may or may not be tied to a program's rate or level of progress.

Other EPA Activities Related to Tribes

In addition to the specific tribal program activities listed in this guidance, EPA is implementing other national activities related to environmental issues on Indian reservations. The scope of this document, however, is limited to issues and activities that are related to Section 106 grants to tribes and the development of tribal water quality protection programs. Focusing on this particular set of issues and activities avoids duplication with strategies or plans prepared for other EPA media programs, or resources and activities administered by the American Indian Environmental Office (AIEO). Consequently, discussions of several major EPA-wide tribal activities are **omitted**. Among these are:

- The development of Indian Environmental General Assistance Program (GAP) grants
- The development of Tribal Environmental Agreements (TEAs)
- The development of a tribal Section of the revised EPA grant regulations (40 CFR Part 35, Subpart B)
- The preparation of a baseline assessment of environmental conditions on Indian reservations
- Planned improvements to tribal training and technical assistance to better address the needs of tribes

A number of these EPA-wide activities provide additional foundation for building a strong water quality program and may be appropriate to specific tribal programs. Additional information on these or any other EPA-wide tribal programs can be obtained from your EPA regional tribal coordinator.

Figure 1: EPA Clean Water Act Section 106 Tribal Guidance Summary

	Chapter 3: Program Initiation, Planning, and Administration Activities	Chapter 4: Monitoring, Data Management, and Data Assessment and Analysis	Chapter 5: Nonregulatory Approach	Chapter 6: Tribal Law Water Quality Protection Approach	Chapter 7: EPA-Approved Water Quality Protection Approach	Chapter 8: Reporting
Fundamental	Applying for TAS Eligibility for the Section 106 Program Implementing Financial Management Systems Applying for Section 106 Grants Identifying Basic Tribal Water Resources Identifying Tribal Needs Identifying Program Objectives and Goals Hiring Staff Training Staff Using Contractors as Appropriate to Your Needs Developing Program Milestones Submitting Work Plans to EPA Conducting Community Education on Basic Program Establishment and Direction Financial and Performance Reporting Conducting Program Evaluations Developing a Multi-year Plan	Monitoring Data Management Data Assessment and Analysis Initiating Mitigation Measures for Known Water Quality Problems	Understanding Watershed-based Planning Understanding NPS Pollution Understanding Decentralized Wastewater Treatment Facilities Understanding Source Water Protection Choosing and Setting Water Quality Goals Determining Areas with Water Quality Problems Choosing and Setting Watershed-based Goals Developing Projects to Meet Water Quality Goals Conducting Public Outreach and Encouraging Public Involvement	Understanding Water Quality Standards Understanding What Tribal Standards Can Do Identifying Goals of Tribal Standards Working in Partnership with EPA, Tribes, and States	Understanding Water Quality Standards Understanding Section 401 Certification Understanding Section 404 Permitting Using EPA WQS Trainings and Educational Materials Reviewing Existing Tribal and State Water Quality Standards Identifying Goals of Tribal Regulatory Program Working in Partnership with EPA, Tribes, and States	Your Assessment Report must include the following elements: 1. Description of your monitoring strategy 2. Water quality assessment 3. Electronic data on the following parameters: ● Dissolved oxygen ● pH ● Water temperature ● Turbidity
Intermediate	Seeking Other EPA Funding Opportunities Providing Enhanced Training to Staff Using Contractors as Appropriate to Your Needs Reassessing Program Objectives and Goals Enhancing and Focusing Tribal Community Education Conducting Program Evaluations	Monitoring Data Management Data Assessment and Analysis	Understanding Section 319 Grants Section 319 Eligibility Developing a Watershed-based Plan Conducting a Source Water Assessment Implementing Water Quality Protection and Restoration Activities Implementing Section 106 Grant Activities Related to Decentralized Systems Analyzing Water Quality Data and Defining Performance Measures	Developing Draft Standards Sharing Draft Standards with EPA, Tribes, and States for Review, as Appropriate Conducting Public Outreach Drafting Tribal Code Based on Standards Formally Adopting Standards through Tribal Council	Applying for Program Authorization for Administering a WQS Program and a Section 401 Certification Program EPA Review of Tribal Application for TAS Eligibility for WQS Program and Section 401 Certification Developing Standards Submitting Draft WQS for Formal Public Hearing and Comment Formally Adopting WQS through Tribal Council Submitting Adopted WQS for EPA Approval Understanding EPA's WQS Review Process Understanding EPA's Dispute Resolution Process	Your Assessment Report must include the following elements: 1. Description of your monitoring strategy 2. Water quality assessment 3. Electronic data on the following additional parameters: ● Phosphorus ● Total nitrogen
Mature	Seeking Additional Federal Funding Opportunities Using Contractors as Appropriate to Your Needs Conducting Comprehensive Community Outreach and Public Awareness Programs Conducting Program Evaluations Mentoring Other Tribes and Local Governments Partnering with Other Organizations	Understanding and Using EPA's "Elements" Guidance	Evaluating Restoration Activities Providing Updated Information to Your Partners and Community Refining Your Assessment Report, Management Program, Source Water Assessment, and Watershed-based Plan Coordinating and Cooperating with Other Programs Working in Partnership with Other Tribes and States Other Voluntary Programs	Implementing Standards Reviewing Standards Developing MOAs with EPA for Permitting Purposes	Implementing WQS Implementing Section 401 Certifications Assuming the Section 404 Program Conducting Triennial Reviews NPDES Program Overview Sources Regulated under the NPDES Program Understanding NPDES Permits Reviewing Permits Considering NPDES Program Authorization Developing Capabilities for Permitting, Compliance, and Enforcement Preparing for NPDES Program Authorization Obtaining NPDES Program Authorization Working with EPA to Transition from Federal to Tribal Implementation Conducting Public Outreach	Your Assessment Report must include the following elements: 1. Description of your monitoring strategy 2. Water quality assessment 3. Electronic data on the following additional parameters: ● Macroinvertebrates ● *E. coli* or enterococci ● Basic habitat information

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Chapter 2: Three Approaches to Implementing Tribal Water Quality Programs

This guidance presents three approaches to implementing tribal water quality programs. Recognizing that tribal water quality programs have different levels of experience and program goals and face different types of jurisdictional issues, EPA has developed three flexible approaches that can accommodate these differences. The approaches also enable tribes to collect and provide to EPA water quality data and information that will help EPA assess improvement in water quality nationwide.

As noted in chapter 1, all three approaches can help tribes successfully manage water resources, and no one approach is better than the others. A tribe may adopt any of these approaches or a combination of these approaches. The approaches are designed as sets of activities based on different options for achieving environmental results. The three approaches are:

- A nonregulatory approach focusing on voluntary programs such as NPS pollution prevention and watershed-based approaches to water quality management. This approach identifies nonregulatory means for protecting and improving water quality.

- An approach that uses tribal standards, ordinances, or codes recognized by a tribal government that can be tribally enforced to protect water quality on Indian reservations.

- An approach that follows the Clean Water Act (CWA) approach to protecting water quality. This approach includes development of EPA-approved WQS and Section 401 certification authority to protect water quality on Indian reservations. Tribal WQS approved by EPA can be used by EPA or tribes with authorized NPDES programs to achieve water quality protection through limits on point source dischargers.

Not every approach is appropriate for every tribe. If you are just beginning to implement a water quality program, you should review the information provided below to decide which approach best suits your tribe's needs. If you are already implementing a water quality program, you should use the guidance to help you identify activities that could enhance it. You also should assess whether you should modify or adapt your approach based on information in the guidance. The guidance is meant to help you decide which approach fits best with your tribe's water quality needs. All tribal programs should use the guidance to evaluate program objectives, future program direction, and all applicable requirements.

Program Links

Review chapters in this guidance that apply to the approach you choose to implement, remembering that the most successful programs will incorporate activities across program areas. To help you identify links across different program areas, in many sections you will find links directing you to related sections of the guidance. Refer to these related sections for information from other program areas that may apply to your program.

EPA recognizes that there are overlaps among these approaches. *The most successful tribal programs will incorporate elements from all approaches to meet their water quality objectives.* For example, tribes with EPA-approved WQS may also incorporate voluntary approaches into their programs; if appropriate, tribes following the nonregulatory approach can provide information about tribal water quality to EPA and/or a neighboring state for their use in developing point source limitations.

Nonregulatory Approach

This approach is appropriate for tribes that can most successfully achieve their environmental goals through nonregulatory activities. This approach does not require the development of WQS. It provides a framework for achieving results through voluntary and collaborative activities, with a strong emphasis on NPS control, non-structural management measures, source water protection, and watershed-based planning. The programs supported under this approach will provide the data, tools, and management infrastructure necessary to make informed decisions about the best ways of improving tribal water quality.

If tribes using only this approach identify point source problems, they will not have the regulatory authority in place to require an entity to meet an EPA-approved WQS. If enforcement became necessary (e.g., against a point source discharger operating without a permit), the tribe would have to rely on enforcement by the federal government. For this reason, the approach is most appropriate for tribes that are not interested in directly pursuing enforcement activities or do not view enforcement as their best means of controlling water pollution.

Allowable NPS Control Activities

NPS management measures requiring construction are implemented under Section 319 of the CWA and are thus ineligible for Section 106 funding. Section 106 funding can be used to develop NPS assessment reports and management programs, which are required elements when applying for Section 319 program authorization. Section 106 grants can also be used to develop watershed-based plans, but cannot be used to implement watershed-based plans. See chapter 5 for more information on NPS activities eligible for Section 106 funding.

Tribal Law Water Quality Protection Approach

This approach for environmental decision making is based on a tribally defined environmental regulatory program. It is intended for tribes that are not interested in pursuing federally approved WQS authority but that would nonetheless like to protect water quality. This approach gives tribes the option of pursuing standards and goals that can be adopted under tribal law. The standards could help the tribe identify impaired water bodies, propose solutions, and develop water quality reports that meet EPA's reporting requirements. (More information on reporting requirements is included in chapter 8.)

This approach gives tribes a mechanism for setting standards under tribal law without obtaining EPA approval for establishing WQS under the CWA. It allows tribes to define their own regulatory priorities. EPA may look to tribal standards for guidance for CWA permitting purposes based on the circumstances. Tribes may also use tribal standards as a guideline when reviewing and providing comments to EPA on proposed permits.

EPA will retain the responsibility for issuing federal permits and establishing federally enforceable permit limits. This approach is most appropriate for tribes that are not interested in establishing federally approved and enforceable WQS as their best means of controlling water pollution.

EPA-Approved Water Quality Protection Approach

This approach to water quality management uses a regulatory framework based on the CWA structure to control water quality. This is an approach that some tribes have followed already to develop their tribal water quality programs. Tribes that use this approach develop and establish EPA-approved WQS, which serve the dual purposes of establishing the water quality goals for a specific water body and serving as the basis for establishment of water quality-based controls. This path requires tribes to obtain an eligibility determination from EPA and to obtain approval from EPA of the water quality standards that have been adopted by the tribe. Tribes that want to implement the NPDES program will also need to obtain separate authorization for the NPDES program. This approach could lead to the development of tribal WQS programs with authority and functions similar to state programs. EPA would continue to have responsibility for administering other provisions of the CWA. If a tribe elects not to pursue authorization for the NPDES program, EPA would continue to administer the NPDES program on reservation waters.

This approach is most appropriate for tribes with mature water quality programs. Tribes that pursue this path to its completion will be able to have their EPA-approved standards incorporated into enforceable CWA NPDES permits to regulate point source dischargers. This will ensure that tribal waters are protected pursuant to the tribe's EPA-approved WQS. Obtaining WQS eligibility is the first step in this approach. A tribe must be determined eligible before EPA can approve its water quality standards. The tribe's EPA-approved standards may allow the tribe to more effectively protect cultural or traditional uses of water bodies.

Other Approaches to Water Quality Protection

This guidance establishes minimum reporting requirements. EPA regional offices have the flexibility to work with tribes to ensure that their water quality programs meet both tribal and EPA needs. Many tribes are already implementing well-established water quality programs that are tailored to their individual circumstances. EPA recognizes the diversity of tribal water quality programs, and has attempted to accommodate this diversity in this guidance.

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Chapter 3: Program Initiation, Planning, and Administration Activities

Introduction

This chapter discusses the administrative activities associated with implementing a tribal water quality program. Regardless of which approach to water quality program development you choose to pursue, your program should include these activities. In this chapter, you will find specific regulatory requirements associated with certain activities, such as required information that you must include in grant applications. It also discusses general concepts to consider for activities that you can implement in a number of ways, such as developing a community outreach plan.

The frequency with which you carry out each activity varies. In some cases (e.g., identifying your tribe's basic water resources), an activity will be conducted only once. In other cases (e.g., conducting a program evaluation), an activity will be conducted periodically.

Tule River. Photo Courtesy of Tule River Indian Tribe.

Activities Included in Chapter 3

Fundamental Program Activities

1. Applying for TAS Eligibility for the Section 106 Program
2. Implementing Financial Management Systems
3. Applying for Section 106 Grants..... *Understanding Grant Application Package Requirements*
   Understanding 40 CFR Part 35 Work Plan Requirements
   Establishing Output- and Outcome-based Activities: Environmental Results
4. Identifying Basic Tribal Water Resources
5. Identifying Tribal Needs..... *Identifying Water Quality Needs*
   Identifying Resource Needs
6. Identifying Program Objectives and Goals
7. Hiring Staff..... *Identifying Skills Needed to Develop a Water Quality Progam*
   Identifying Available Resources
8. Training Staff
9. Using Contractors as Appropriate to Your Needs
10. Developing Program Milestones
11. Submitting Work Plans to EPA
12. Conducting Community Education on Basic Program Establishment and Direction
13. Financial and Performance Reporting
14. Conducting Program Evaluations..... *Conducting a Joint Evaluation*
    Conducting a Self-evaluation
15. Developing a Multi-year Plan

Intermediate Program Activities

Tribes should begin these activities after having completed the relevant fundamental program activities.

1. Seeking Other EPA Funding Opportunities
2. Providing Enhanced Training to Staff
3. Using Contractors as Appropriate to Your Needs
4. Reassessing Program Objectives and Goals
5. Enhancing and Focusing Tribal Community Education
6. Conducting Program Evaluations

Mature Program Activities

Tribes should begin these activities after having completed the relevant fundamental and intermediate program activities.

1. Seeking Additional Federal Funding Opportunities
2. Using Contractors as Appropriate to Your Needs
3. Conducting Comprehensive Community Outreach and Public Awareness Programs
4. Conducting Program Evaluations
5. Mentoring Other Tribes and Local Governments
6. Partnering with Other Organizations

I. Fundamental Program Activities

1. Applying for TAS Eligibility for the Section 106 Program

The general requirements for TAS are set forth in CWA Section 518 and for the 106 program in particular at 40 CFR 130.6(d) and 40 CFR 35.583. Some of the CWA Section 518 statutory requirements are summarized below, but the tribe should refer to the statute and regulations for a complete statement of the TAS requirements.

1. The tribe must be recognized by the Secretary of the Interior and exercise governmental authority over a federal Indian reservation;

2. The tribe must have a governing body carrying out substantial governmental duties and powers;

3. The functions to be exercised by the tribe must pertain to the management and protection of water resources that are held by an Indian tribe, held by the United States in trust for Indians, held by a member of an Indian tribe if such property interest is subject to a trust restriction on alienation, or otherwise within the borders of an Indian reservation; and,

4. The tribe is reasonably expected to be capable, in EPA's judgment, of carrying out the functions to be exercised in a manner consistent with the terms and purposes of the CWA and all applicable regulations.

Clean Water Act Citations

Throughout this guidance, you will see CWA citations. You can view full CWA text online at http://www.epa.gov/region5/water/cwa.htm.

As authorized under 40 CFR 35.583, intertribal consortia are eligible to receive grants under Section 106 if they can show that each of the member tribes authorizing the consortium to act on its behalf is federally recognized and has met the requirements for Section 106 TAS eligibility. A consortium must have adequate documentation of the existence of the partnership and the authorization to apply for and receive assistance. Tribes may receive grants both as a tribe and as a part of an intertribal consortium as long as the grants do not fund the same projects.

You must submit a TAS eligibility application to your EPA region, and the region must approve it in order for your tribe to become eligible to receive Section 106 grants. Therefore, you cannot fund your Section 106 TAS eligibility application with Section 106 funds. Tribes have used General Assistance Program (GAP) grants to fund their application process. See section II.1 of this chapter for more information on GAP grants. Your TAS eligibility application can be included with an application for a Section 106 grant. Check your region's annual Section 106 funding opportunity announcement for more information on submission of TAS eligibility applications.

Code of Federal Regulations Citations

Throughout this guidance, you will see Code of Federal Regulations (CFR) citations. You can view full CFR text at the Government Printing Office's Electronic CFR (eCFR) Web site, http://www.gpoaccess.gov/ecfr/.

The TAS eligibility process ensures that tribes have the legal, technical, and managerial resources to successfully use a water quality grant. Contact your EPA regional office to begin the application process. Updated contact information is available online at http://www.epa.gov/owm/mab/indian/106coord.htm.

Over 200 tribes in the country already have received eligibility for Section 106 grants. The experiences of these tribes may be valuable to tribes that are considering applying for Section 106 eligibility. Your EPA regional office may be able to provide you with contact information for other tribal water quality programs in your region if you need it.

Obtaining Hard Copies of Electronic Resources

Throughout this guidance you will find links to online technical documents, policies, and other guidances. If you wish to obtain a hard copy of any of these documents, you should contact your EPA regional office or the EPA Water Resource Center using the contact information provided below:

United States EPA
Water Resource Center (PC-4100)
1200 Pennsylvania Ave., NW
Washington, D.C. 20460

Phone: (202) 566-1729
Fax: (202) 566-1736

2. Implementing Financial Management Systems

You must be able to adequately track your grant expenditures and establish effective accounting procedures to comply with grant requirements. OMB requires that all grantees report their financial status to the agency that issued their grant. At all times, you should ensure that you keep adequate books and records, use appropriate budgeting, accounting, and financial planning methods, and manage financial resources effectively, in accordance with OMB Circular A-87, available online at http://www.whitehouse.gov/omb/circulars/a087/a087-all.html.

The Governmental Accounting Standards Board (GASB) establishes standards of financial accounting and reporting for governmental entities. You may want to review information available on its Web site (http://www.gasb.org/) and use this information to evaluate your financial management systems.

OMB has issued a number of publications related to financial management systems and requirements for grant recipients. Visit http://www.whitehouse.gov/omb/financial/fin_grants_expanded.html#admin for more information on financial management systems.

Office of Grants and Debarment

EPA's Office of Grants and Debarment Web site (http://www.epa.gov/ogd/index.htm) contains tutorials, forms, policies and regulations, and other resources that may help you navigate the grant application process. Visit the Web site for more information.

3. Applying for Section 106 Grants

a. Understanding Grant Application Package Requirements

You may submit applications to receive Section 106 grant awards if your tribe has been found eligible for TAS for Section 106 grants. You may also submit your TAS eligibility application in conjunction with your application to receive a Section 106 grant award or in accordance with your region's annual tribal Section 106 funding opportunity announcement. In accordance with OMB Circular A-87, your grant application must:

- **Include EPA grant application form SF 424, Revision 9**, and all required forms and certifications, which can be obtained from your EPA regional office or from the following EPA Web site: http://www.epa.gov/ogd/AppKit/index.htm.

- **Include a proposed work plan**. More information on developing a work plan is provided in section I.3.b of this chapter; you should also refer to your region's annual tribal Section 106 funding opportunity announcement.

- **Specify the amount of funds requested**. EPA may provide up to 95 percent of your eligible costs for a Section 106 grant award. Your tribe must provide 5 percent of the work plan costs. Work plan costs include costs of planning, developing, establishing, improving, or maintaining a water pollution control program. The match requirement also may be met by tribal in-kind contributions (e.g., volunteer services, property, supplies, equipment). See the *Interim Guidance for Cost Sharing/Match Requirement on the Award of Grants to Indian Tribes*, January 30, 1998 (available online at http://www.epa.gov/owm/rmes/tribalcwas106_app-d.pdf) for more information. Your Regional Administrator (RA) may increase the maximum federal share if you can show that fulfilling the match requirement through either matching funds or in-kind contributions would impose undue hardship (40 CFR 35.585). Your tribe can also contribute more than the 5 percent match if funds are available. A tribe would have to contribute more if there were no more federal funds available to carry out the grant.

- **Demonstrate that the tribe meets the requirements of CWA Section 106(e) for water quality monitoring and emergency authority.** This emergency authority, described in CWA Section 504, is to respond to a discharge of pollutants that is presenting an imminent and substantial endangerment to the health or livelihood of any person by bringing suit in a court to immediately enjoin the discharge or to "take such other action as may be necessary."

- **Meet the requirements of 40 CFR Part 31, Subpart B**. These requirements may include special conditions that may apply to specific situations (e.g., grants to "high-risk" grantees). Ask your EPA regional office for more information.

- **Meet the requirements of 40 CFR Part 35**. These requirements specify what you need to include in your work plan and are discussed in section I.3.b of this chapter.

You must submit a complete application to your EPA regional office in accordance with your EPA region's annual tribal Section 106 funding opportunity announcement. You may negotiate the length of the budget period. Consult your EPA regional office on due dates for work plans and proposals, as these dates vary from region to region.

b. Understanding 40 CFR Part 35 Work Plan Requirements

The work plan is the basis for managing, planning, and evaluating performance under the Section 106 grant agreement. Work plans are the result of negotiations with your EPA regional office and reflect consideration of national, regional, and tribal environmental and programmatic needs and priorities. You should make sure that your work plan is consistent with the goals and objectives, priorities, and performance measures in EPA's strategic plan (see chapter 1 for more information on EPA's strategic plan) and the activities included are eligible under Section 106 (see figure 2 for more information on eligible activities). Close interaction with your grant project officer throughout the work plan development process can help you develop an effective work plan. In regions where the Section 106 grant process is competitive, however, grant project officers will be limited in their ability to provide assistance. When assistance agreements are awarded competitively, EPA policy requires that the competitive process be fair and impartial, that all applicants be evaluated only on the criteria stated in the announcement, and that no applicant receive an unfair competitive advantage. You can find information on EPA's competitive process, including EPA Order 5700.5A1, "Policy for Competition of Assistance Agreements," on EPA's Office of Grants and Debarment Web site, http://www.epa.gov/ogd/.

Your work plan must comply with applicable federal statutes, regulations, circulars, executive orders, and delegation or authorization agreements, and at a minimum must specify:

- The work plan components to be funded under the grant
- The estimated work years and estimated funding amount for each work plan component
- The work plan commitments for each work plan component and a time frame for their accomplishment
- A performance evaluation process and reporting schedule
- The roles and responsibilities of the recipient and EPA in carrying out the work plan commitments
- Environmental outcomes, the results, effects, or consequences that will occur from carrying out the environmental program or activity that is related to a work plan's environmental or programmatic goal or objective
- Environmental outputs, environmental activities or efforts and associated work products related to an environmental goal or objective that will be produced or provided
- A budget (see section I.5.b of this chapter for more information on budgets)

Lake Havasu. Photo courtesy of Chemehuevi Indian Tribe.

Section 106 grants are intended to support the prevention and reduction of surface and ground water pollution from point and nonpoint sources. As noted in the introduction, you may use Section 106 grants to fund a wide range of water pollution control activities, including:

- Water quality planning, assessments, and studies
- Ambient monitoring
- Community outreach and education activities
- Source water, surface water, ground water, and wetland protection activities
- Development and update of NPS control planning activities (including NPS assessments and management plans)
- Development of WQS
- Development of total maximum daily loads (TMDLs)

Funds cannot be used for construction, operation, or maintenance of wastewater treatment plants or drinking water systems, nor can they be used for costs that are already financed by other federal grants. Tribes receiving GAP grants may not duplicate their capacity building efforts with Section 106 grants. Your region's annual tribal Section 106 funding opportunity announcement may include other requirements for the use of Section 106 funds. Review your regional announcement for more information.

Figure 2 lists examples of eligible and ineligible Section 106 activities.

Sections I.4 through I.11 of this chapter will help you develop work plan components, commitments, and goals based on your tribe's water resources, needs, and program goals and objectives.

c. Establishing Output- and Outcome-based Activities: Environmental Results

EPA Order Number 5700.7 (Environmental Results under EPA Assistance Agreements) went into effect in January 2005. The order requires EPA to link all grant activities to its strategic plan and to consider how the environmental results of completed activities will further EPA's goals and objectives when making decisions on grant applications. EPA also must ensure that grant activities address outputs and outcomes. Your grant application should contain a description of the link between activities you propose and EPA's strategic plan and a discussion of any expected outputs or outcomes. You can view the order and guidance on complying with the order at http://www.epa.gov/ogd/grants/award/5700.7.pdf.

For the purposes of EPA work plans, **outputs** reflect the products or services a program will provide. They do not by themselves measure or quantify the environmental results of a work plan. Examples of outputs include training, the number of permits issued, and the number of samples collected.

Environmental **outcomes** are actual changes or benefits resulting from the activities or outputs of the program and must be quantifiable. Examples of outcomes are measurable improvements in water quality and increases in the number of facilities that meet effluent limits.

Figure 2: Allowable and Ineligible Section 106 Activities

Classification	Category	Activity
Allowable Activities	Program Management	Capacity building
		Compliance and enforcement
		Finance, budgeting, and record-keeping
		Networking and cross-boundary coordination
		Non-structural source water, surface water, ground water, and wetland protection
		Personnel costs, including contractor costs
		Planning, developing, improving, or maintaining a water pollution control program
		Program initiation and administration
		Training
		Water quality planning, assessments, and studies
	Monitoring	Quality Assurance Project Plan (QAPP) development
		Data analysis and assessment
		Data management
		Experiments
		Investigations, surveys, and special studies
		Laboratory costs
		Research and development
		Source water, surface water, ground water, and wetlands monitoring activities
	Standards-based Activities	Developing water quality standards (WQS)
		Permit issuance, including National Pollutant Discharge Elimination System (NPDES) permits to control point sources
		Violation enforcement activities aimed at correcting violations, deterring future violations, and promoting equal treatment of the regulated community
		Developing a 401 Certification Program
		Developing total maximum daily loads (TMDLs)
	Nonpoint Sources (NPS)	Attending NPS meetings and trainings
		Developing non-structural controls to reduce NPS pollution
		Forming partnerships to address NPS issues
		NPS inventories, assessments, and management plans
		Watershed-based planning
	Community Related Activities	Community/tribal outreach, education, and public awareness
		Involving the public in program development
		Establishing voluntary programs
Ineligible Activities		Construction, operation, or maintenance of wastewater treatment plants or drinking water systems
		Costs that are already financed by other grants (e.g., section 319 grants)
		NPS management measures requiring construction (i.e., "on the ground" management measures)
		Public Water System Supervision (PWSS) compliance monitoring

Although your program should strive to produce outcomes, in some cases outputs will be the most appropriate goals for your work plan, especially early in your program's development. Outcomes may take many years to achieve or occur after a grant period ends. In addition, even if a desired environmental outcome occurs, it may be difficult to link the outcome to the activities you performed.

Examples of Outputs and Outcomes for Environmental Activities

Monitoring
- **Outputs:** Number of samples collected
- **Outcomes:** Improved understanding of water body condition

Research and development, studies, surveys, investigations, and experiments
- **Outputs:** Number of experiments or samples, number of reports or publications
- **Outcomes:** Advancement in knowledge on the effects of pollution as reflected in a peer-reviewed scientific journal article

Training and outreach
- **Outputs:** Number of training sessions, number of persons trained
- **Outcomes:** Increase in knowledge as demonstrated by pre- and post-training surveys

Compliance and enforcement
- **Outputs:** Number of inspections or enforcement actions
- **Outcomes:** Increase in number of facilities that reduce emissions or other pollutants, quantity of emissions or pollutants reduced

4. Identifying Basic Tribal Water Resources

The first step in creating a water quality program is assessing the water resources located on your reservation or that pertain to reservation water resources. The most effective water quality programs will incorporate all types of water bodies located on your tribe's reservation. Although initially your program might not be able to address every type of water body, you should make sure that you are aware of all of your tribe's water resources when assessing your needs. Types of water resources include:

- **Streams and Rivers**: A stream is a natural body of flowing water; a river is a large stream.
- **Oceans, Coasts, and Coastal Waters**: Coastal waters include shore miles, near coastal waters, and estuaries.
- **Lakes**: Lakes are inland bodies of salt water or fresh water.
- **Wetlands**: Wetlands include swamps, marshes, bogs, and similar areas. Wetlands serve many important functions including flood mitigation, water storage, habitat, and natural water filtration.
- **Ground Water**: Ground water occurs as part of the hydrologic cycle. As rain and snow fall to the earth, some water soaks into the ground and flows downward. Ground water refers to water in the "saturated zone" — the area in which the spaces between rocks, gravel, sand, or soil are filled with water. Areas where ground water exists in sufficient quantities to supply wells or springs are called aquifers.

Incorporating Section 106 Funds into Performance Partnership Grants

Section 106 grants are eligible for inclusion in Performance Partnership Grants (PPGs). PPGs combine funds from two or more environmental program grants into a single grant with a single budget. PPGs enable you to better direct funding toward the most critical environmental problems while continuing to address core program requirements; better address cross-program strategies such as community-based environmental protection, pollution prevention, and environmental justice; and, reduce administrative burdens and costs by reducing the numbers of grant applications, budgets, work plans, and reports. If you are interested in pursuing PPGs, you should work in partnership with your EPA regional office to develop a PPG that meets EPA statutory and program requirements. An application for a PPG must contain:

- A list of the environmental programs and the amount of funds from each program to be combined in the PPG
- A consolidated budget
- A consolidated work plan that addresses each program being combined in the grant and that meets the Section 106 work plan requirements

You can find more information on PPGs at http://www.epa.gov/water/PPG/ppgguide.html. PPG requirements are also listed in 40 CFR 35.530 et. seq.

Your tribe may already be familiar with all the water resources located on your land. If you do not know all of your water resources, the following organizations may be able to help you identify them:

- Your EPA regional office, http://www.epa.gov/ow/region.html.
- EPA's Watershed Assessment, Tracking, and Environmental Results (WATERS) Reach files, a series of national hydrologic databases that identify and interconnect the stream segments or "reaches" that compose the country's surface water drainage system. WATERS Reach data and tools are available online at http://www.epa.gov/waters/doc/rfindex.html.
- The United States Geological Survey (USGS), http://www.usgs.gov/, in particular the National Hydrography Dataset (NHD), available online at http://nhd.usgs.gov/. NHD is a comprehensive set of digital spatial data that contains information about surface water features such as lakes, ponds, streams, rivers, springs, and wells.
- The United States Department of Agriculture's (USDA's) Natural Resources Conservation Service (NRCS), http://www.nrcs.usda.gov/.
- Regulatory agencies for neighboring states or tribes (e.g., departments of health, environment, parks and recreation, natural resources, forestry, fish and wildlife).
- Local colleges or universities.
- Perhaps most important, members of your tribe.

5. Identifying Tribal Needs

a. Identifying Water Quality Needs

Identifying your tribe's environmental and water quality protection needs is the most essential part of developing a water quality program. A tribe's environmental and water quality protection needs will define the approach you take to building your program, its direction, and the projects you choose to implement. Your needs can be related to any of the types of water pollution control activities eligible for funding with Section 106 grants. (See section I.3.b of this chapter for more information on eligible activities.) You might need to assess the environmental condition of your water bodies (e.g., develop a baseline assessment of the quality of your rivers). Your needs might be related to a known or potential environmental problem or threat to public health, the environment, or your tribe's quality of life (e.g., a polluted river). If your tribe relies on septic systems, you might consider identifying system malfunctions and health and water risks and setting up a management program to reduce the threats to water quality a major need.

After you have identified your environmental and water quality needs, you should rank them to identify the most critical ones. There is no one correct way to prioritize your needs, but some factors you might want to take into consideration are:

- What needs are most important to your tribe
- How the needs relate to one another (i.e., will your tribe have to address one need before it can address another need?)
- Whether the needs pose a threat to public health, safety, or the environment
- The expected benefits of addressing the need
- How much it will cost to address the need

Prioritizing your needs will help you decide which activities require urgent attention and which cannot or do not need to be addressed immediately. They will also shape your program goals.

b. Identifying Resource Needs

In accordance with 40 CFR 35.507(b)(2)(ii), your work plan must include a budget, or the cost associated with completing the activities in the work plan. After you have identified your water quality needs, think about the financial resources you will require to address those needs. Financial needs include personnel costs, consultant costs, travel, equipment, supplies and materials, laboratory services, and overhead costs (e.g., office space, supplies, computer equipment). Your EPA regional office may be able to help you develop a budget.

Remember that your tribe must provide 5 percent of the work plan costs. Your Regional Administrator may increase the maximum federal share if you can show that fulfilling the match requirement through either matching funds or in-kind contributions would impose undue hardship.

6. Identifying Program Objectives and Goals

Goals are the desired outcomes for your program, based on the water quality needs you identified in section I.5.a. For example, if you identified the lack of a baseline assessment of the quality of tribal waters as a significant need, one of your program goals should be to develop a baseline assessment.

Your **objectives** are the activities you take to achieve your goals. For example, if your goal is to develop a baseline assessment of water quality condition of your water bodies, you should include monitoring water bodies on your reservation as an objective.

The objectives and goals you identify in this section will shape the rest of your program. You should structure your work plan activities so that you will meet your goals and objectives. Your goals and objectives will also determine which approach to water quality program development you select.

Figure 3 illustrates the relationship among needs, goals, and objectives.

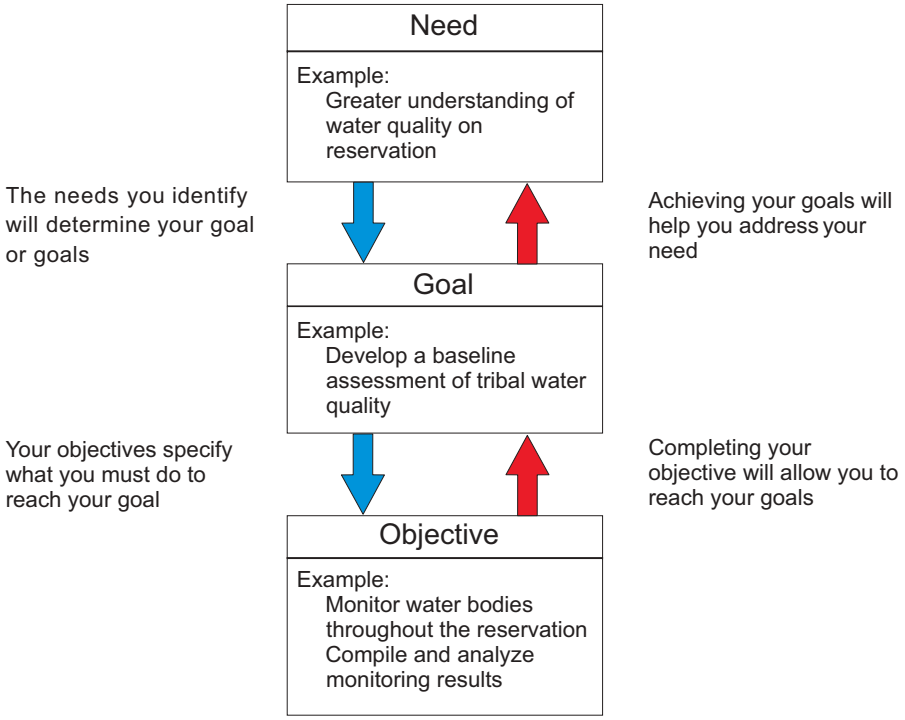

Figure 3: Needs, Goals, and Objectives

7. Hiring Staff

a. Identifying Skills Needed to Develop a Water Quality Program

You will need personnel with specific skills to help you implement your water quality program. Depending on your program's size and goals, you may need the skills of environmental specialists, water quality specialists, biologists, lab technicians, engineers, and administrative assistants, among others. When developing your work plan, you should consider what kinds of personnel you will need to achieve your water quality program goals. See section I.6 of this chapter for more information on developing water quality program goals.

For more information on identifying key program personnel, see page 48 of *Listening to Watersheds: A Community-based Approach to Watershed Protection* (Angie Reed and Geoff Dates; River Network National Office; Portland, OR; 2003). This guidebook was written specifically for tribes. It is available online at http://www.rivernetwork.org/ltw/.

Indirect Costs

Indirect costs are expenses that do not result from the cost of direct labor. Such costs include *Overhead*, costs ancillary to direct labor, *General and Administrative (G&A)*, which are the costs of running an organization as a whole, and *Materials Handling*, the costs of administering contractors and consultants. Some tribes have a standard rate that they use to calculate indirect costs for their budgets. Contact your tribal officers or EPA regional office for more information.

b. Identifying Available Resources

Consider any resources that are available to your program. Can staff from neighboring tribal programs provide you with technical assistance? Some tribes that have advanced water quality programs have mentored tribes with less advanced programs to help develop their programs. Can volunteers help carry out any of the activities in your work plan? Several tribal programs have used volunteers from the community, local high schools, tribally sponsored internship programs, community colleges, or university programs. Some tribes use seasonal or part-time hires to help collect samples during busy summer months. You may be able to incorporate volunteer recruitment into your community outreach efforts and count activities carried out by volunteers towards your 5 percent match requirements according to the provisions in 40 CFR 31.24(c). See section II.5 of this chapter for more information on recruiting volunteers.

8. Training Staff

Regardless of the expertise of your program's staff members, you will probably need to provide some training for them. Training topics will vary depending on your program needs and staff qualifications but could include sample collection, quality assurance (QA) procedures for samples, computers, and data management. Identify elements on which your staff will need training to achieve your program goals. If anticipated training is included in your work plan and is related to CWA Section 106 issues, it is an allowable expense. Check with your grant project officer to ensure that the training cost is allowable.

Tribes, states, EPA Headquarters, EPA regions, technical assistance providers, colleges and universities, and stakeholder groups are some of the organizations that offer training, workshops, and symposia to help you and your staff acquire necessary knowledge. EPA's Office of Wastewater Management (OWM) maintains a list of some training opportunities online at http://www.epa.gov/owm/mab/indian/training.htm. The American Indian Environmental Office (AIEO) lists a number of educational opportunities at http://www.epa.gov/indian/training.htm. EPA's Office of Wetlands, Oceans, and Watersheds (OWOW) also offers distance learning courses on its Web site (http://epa.gov/watertrain/). EPA's Office of Science and Technology offers training on the Water Quality Standards Program at http://www.epa.gov/waterscience/standards. Contact neighboring tribes and states as well as your EPA regional office to see if they offer training that might be of use to your tribe.

Keep future availability of training in mind when deciding whether to attend training; if you have access to a unique training opportunity that does not meet immediate program needs but might benefit future activities, you may want to consider attending.

9. Using Contractors as Appropriate to Your Needs

Tribes can use their Section 106 funds to support water program activities through EPA contractor support. Contractors can supplement the technical capacity of your program if your in-house staff lacks technical expertise in some areas, and even help you to develop your program and perform some basic program functions, such as sample collection. You may find contractor support for complex activities, such as sample analysis, information technology (IT) support, training, and legal analysis, among others, especially helpful in the early stages of program development. Procurement for contractor services must be consistent with 40 CFR 31.36.

10. Developing Program Milestones

It may take several years to achieve your program goals and objectives. Milestones, or significant accomplishments towards achieving your goals and objectives, will enable you to track progress. For example, completing a baseline assessment for a specified percentage of the water bodies on your reservation could be a milestone in completing a baseline assessment for all water bodies on your reservation.

Your work plan should include milestones, especially if you anticipate that you will need more than one grant cycle to achieve your goals and objectives. Milestones will help you and EPA track performance even if you do not achieve your long-term goals and objectives in one grant cycle.

11. Submitting Work Plans to EPA

After you have considered the information in sections I.3-I.10 of this chapter, you should draft a work plan and submit it to your EPA regional office for approval. In all cases, the work plan will reflect the result of negotiations between the tribe and its grant project officer. In non-competitive situations, the best proposals are developed through close interaction with your grant project officer throughout the work plan development process. Remember that in cases where Section 106 grants are awarded through a competitive process, grant project officers may be limited in their ability to assist you in work plan development. See section I.3.b of this chapter for more information.

When evaluating your work plan, your grant project officer will consider how your work plan fits in with EPA's strategic plan, including this national guidance, and any additional regional goals and programs. If applicable, your grant project officer will also consider previous work plans and other jointly identified needs and priorities. If your proposed work plan goals differ significantly from these, your grant project officer may ask for a modified work plan.

12. Conducting Community Education on Basic Program Establishment and Direction

For many tribes, water resources are a vital part of tribal culture. Tribal communities have sustained watersheds and waterways for centuries. The knowledge your tribe has accumulated through its history of environmental stewardship is an invaluable resource to your water quality program. A successful tribal water quality program depends on community involvement and participation. In addition, informed members of the community are more likely to support your program's efforts to protect the environment. As mentioned in section I.7.b of this chapter, volunteers from the community might be able to help you implement the program, allowing you to devote funding to other areas. Community members might have ideas that help you define your program's needs and priorities. And if you need financial assistance from your community, a more informed population is more likely to help.

In the early stages of your program's development, you probably will not have a great deal of information to pass along to your community, but it is still a good idea to let your community know that you have started to develop a water quality program. You can tell the community members about the needs, goals, and objectives you have identified and explain how you will address them. Let them know that as the program develops, you will provide information on its progress.

EPA New England Regional Laboratory Ecology Monitoring Team

It may be infeasible or impracticable to develop some expertise in-house. In these cases, EPA may be able to provide technical assistance to fill these needs. The EPA New England Regional Laboratory Ecology Monitoring Team, for instance, provides a wide array of services to states and tribes in Region 1. Specific capabilities include:

Field Studies

- Baseline or Ambient Water Quality Monitoring (e.g., nutrient-flux studies used to develop TMDLs)
- Biomonitoring (i.e., biological assessment of macroinvertebrate and fish communities)
- Time-of-travel and Dispersion Studies
- Global Positioning System
- Sediment Sampling
- Ecological Risk Assessment
- Wetland Assessments (e.g., delineation, botanical studies)
- NPS Monitoring
- Point Source Monitoring
- Emergency Response (e.g., accidental release assessments)

Biology Laboratory

- Toxicity Testing
- Microbiology
- Polymerase Chain Reaction (PCR)
- Other Capabilities (e.g., algae identification, statistical analysis, research grant application development)

Contacts

Connecticut:	Maureen Hilton	(617) 918-8608
Maine:	Tim Bridges	(617) 918-8603
Massachusetts:	Tom Faber	(617) 918-8672
New Hampshire:	Jack Paar	(617) 918-8604
Rhode Island:	Maureen Hilton	(617) 918-8608
Vermont:	Tom Faber	(617) 918-8672
Tribes:	Tim Bridges	(617) 918-8603

13. Financial and Performance Reporting

In addition to any work plan requirements, there are financial and performance reporting requirements associated with Section 106 grants. Your region may require additional elements, but at a minimum, all progress reports must contain the required elements listed in 40 CFR 31.40(b):

- A comparison of actual accomplishments to the objectives established for the period
- An explanation of why you failed to meet any objectives (if applicable)
- Any additional pertinent information, such as analyses or explanations of cost overruns

In addition, your report must discuss how activities performed under the Section 106 work plan addressed water quality problems on your reservation. Regional grant offices may choose not to grant a new proposal until the old grant is properly closed out and you have met all reporting requirements. Your region may grant you an extension if you need one.

Your region may have additional reporting requirements, and your work plan may establish additional commitments and deliverables based on negotiations with your EPA region. Check with your EPA regional office for more information on reporting requirements and schedules in your region.

Note that in addition to performance reporting requirements, you must submit an Assessment Report to EPA. The Assessment Report must include certain data collected using Section 106 funding. This reporting is discussed more extensively in chapter 8.

14. Conducting Program Evaluations

a. Conducting a Joint Evaluation

As required by 40 CFR 35.515, you and your EPA regional office must develop a joint process for evaluating work plan progress and accomplishments. During the evaluation process, you must discuss:

- Accomplishments against work plan commitments
- Cumulative effectiveness of the work performed under each of the work plan components
- Existing and potential problem areas
- Suggestions for improvement, including, where feasible, schedules for making improvements
- Water quality problems specific to your tribe

Your regional grant project officer will compile an end-of-year evaluation report and provide it to you.

b. Conducting a Self-evaluation

In addition to the joint evaluation you conduct with EPA, you should consider taking stock of your program through a program-wide self-evaluation not limited to your current work plan. A program-wide evaluation can help you make sure that besides meeting all regulatory requirements, you are making the best decisions for your program and its priorities. Some of the questions you may want to ask during your self-evaluation are:

- How do you establish program goals and objectives? Is this process efficient? How should you establish goals in the future?
- Are you making progress toward achieving your program's goals? Are you on schedule to meet your program goals? Why or why not?
- Do you have enough resources (e.g., money, equipment, facilities, training) to achieve the goals?
- How efficiently are you achieving your goals? Can you think of ways to complete tasks more efficiently?

During your self-evaluation, you can request feedback from other members of your tribe, the tribal government, your regional EPA coordinator, and other appropriate individuals who have worked with your program.

15. Developing a Multi-year Plan

After you have completed a program evaluation, the last fundamental activity that you should consider accomplishing before moving forward with your program is to develop a multi-year plan for your own records. Reassess your tribal needs and your program objectives and goals when you develop your multi-year plan. You may find that new circumstances or the results of your activities have given you insight into other needs or problem areas. Begin to think about more complex projects that build on the results of your previous work plans. For instance, if you have found that a water body on your reservation has high levels of nutrients, set out to identify the causes behind those levels.

Developing a multi-year plan will help you make sure that your program evolves in the right direction as it matures and develops, and it will help you stay focused on achieving your goals. Your plan does not have to be set in stone or contain detailed information about specific activities, but it should describe the goals your program intends to achieve, why you intend to achieve them, and how you will achieve them.

II. Intermediate Program Activities

1. Seeking Other EPA Funding Opportunities

As your program matures, you may want to implement activities that require additional funding from non-Section 106 funds. EPA makes available several other grant opportunities to tribes:

- **General Assistance Program (GAP) Grants**: GAP grants are authorized through the Indian Environmental General Assistance Program Act of 1992. The GAP program is administered by AIEO. The program provides tribes and intertribal consortia with general assistance for planning, developing, and establishing the capability to implement environmental protection programs in Indian Country. Activities covered by GAP grants include development of legal and administrative structures, development of technical capability, and establishment of a management program for project and program-specific assistance (e.g., Section 106 grants).

- **Wetland Program Development Grants (WPDGs)**: Tribal governments and intertribal consortia are eligible to apply for WPDGs. EPA awards wetlands development grants to assist in the development of new, or the refinement of existing, wetlands protection and management programs. Grants can be used for research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution.

- **Section 319 Grants**: Congress has authorized EPA to award NPS pollution control grants to tribes under Sections 319 and 518 of the CWA. NPS pollution occurs when rainfall, snowmelt, or irrigation runs over land or through the ground, picks up pollutants, and deposits them into water bodies. Tribes must have approved NPS assessments and management programs as well as TAS status to receive Section 319 funding. An NPS assessment report describes existing and potential NPS-related water quality problems as well as existing methods used to control NPS pollution. An NPS management program describes how you intend to correct or prevent existing and potential NPS pollution. NPS assessments and management plans can be developed using Section 106 funds. More information on Section 319 grants and NPS activities is in chapter 5.

- **National Environmental Information Exchange Network (NEIEN) Grants**: EPA and states, territories, and tribes are working together to develop the NEIEN, an Internet- and standards-based, secure information network that will allow electronic reporting, sharing, integration, analysis, and use of environmental data from many different sources. The NEIEN Grant Program provides funding to tribes and intertribal consortia to help them develop the information management and technology capabilities they need to participate in the exchange network. This grant program supports: the acquisition and development of computer hardware and software; the development of common data standards, formats, and trading partner agreements for sharing data over the exchange network; and, the planning, development, and implementation of collaborative, innovative uses of the exchange network.

You can find more information on GAP and Section 319 grants at http://www.epa.gov/indian/tgrant.htm. You can find more information about WPDGs at http://www.epa.gov/owow/wetlands/grantguidelines/. More information on NEIEN grants is available at http://www.epa.gov/neengprg/.

These are not the only EPA funding opportunities available to tribes. EPA Region 8 has developed *Water Management Solutions: A Guide for Indian Tribes* (EPA 908-K-93-001), available online at http://epa.gov/waterscience/tribes/wms.pdf. This guide contains detailed information about EPA water quality programs available to tribes, including requirements, sources of technical assistance, and regulations related to each program. You can also find additional sources of funding at EPA's Catalog of Federal Funding Sources for Water Protection Web site, http://cfpub.epa.gov/fedfund/, a searchable database of grant, loans, and cost-sharing programs available to fund a variety of watershed protection projects.

2. Providing Enhanced Training to Staff

The capabilities of your staff should mature as your program grows and matures to ensure that you can continue to meet your program's needs. As your program develops, and as funding allows, identify training opportunities that would benefit your staff. Keep tabs on your staffing needs and think of ways to address them as necessary. (See section I.7.a of this chapter for more information on identifying staffing needs.)

Retaining qualified program staff is one of the greatest challenges facing many tribal programs. If your program relies exclusively on one person for expertise in any given area, it stands to lose that expertise if that person leaves. To the extent possible, train other staff members in program areas for which you rely on one person for expertise. This way, your program's performance will be less severely affected if a member of your team becomes unavailable.

3. Using Contractors as Appropriate to Your Needs

Generally, intermediate programs should have the capacity to perform all of their fundamental activities across all program areas with in-house staff, although they may use contractors to supplement the program staff in performing fundamental program activities. (See the following chapters for information on fundamental program activities within other program areas.) You may still need contractor assistance for more complex activities, such as analyzing samples or providing training.

4. Reassessing Program Objectives and Goals

As you complete work plan activities and reach milestones identified under section I.10 of this chapter, you will learn more about your tribe's water resources. Reassess your tribal needs and your program objectives and goals using this information, as you did when developing a multi-year plan. (See section I.15 of this chapter.) To maximize the success of your water quality program, you must keep your goals and objectives up to date. Incorporate your environmental results and goals into all aspects of program planning.

5. Enhancing and Focusing Tribal Community Education

As your program matures, you should continue to provide information about it to your community. In addition to following up on the information you have already provided (e.g., updating program goals and objectives, highlighting new community needs, reporting achievements), you can also develop focused community outreach plans to meet specific needs. For example, you could distribute fliers requesting participants for a volunteer monitoring program or hold a public meeting to discuss the importance of properly disposing of motor vehicle fluids. The excerpt from the Mississippi Band of Choctaw Indians' 2002-2003 work plan, below, describes a program to educate the tribe's youth about water quality issues.

OWM's What You Can Do Web site (http://www.epa.gov/water/citizen.html) lists a number of publications and Web sites with information on raising public awareness. EPA's Office of Wetlands, Oceans, and Watersheds (OWOW) Web site (http://www.epa.gov/owow/volunteer.html) has information on volunteer activities. EPA's Environmental Education Web site (http://www.epa.gov/enviroed/index.html) also has links to a number of resources you can use.

> From the Mississippi Band of Choctaw Indians' 2002-2003 work plan:
>
> The Choctaw Tribe realizes that education is the best tool for conserving the natural resources.... The Choctaw Tribe realizes that the future is in the hands of today's youth. In collaboration with the Youth Opportunity Program, the Choctaw Environmental Program Office will introduce training sessions and various laboratory procedures for the analysis of water samples.... Educational outreach activities will also be conducted at the tribal schools to promote public awareness of the CWA and its goal to protect and enhance water quality.

6. Conducting Program Evaluations

In accordance with 40 CFR 35.515, you must continue to conduct joint program evaluations (described in section I.14.a) with your EPA regional office. In addition, you should continue to conduct program self-evaluations regularly. As your program matures and you incorporate more sophisticated activities into your work plan, you may find that answering the questions presented in section I.14.b has become more challenging. You may identify additional goals and objectives that strain your resources and make you prioritize your activities. The approaches you adopted earlier may not work in all circumstances. Your experience may change your perspective on a project you considered unfeasible earlier, or you may be able to expand on the results of past projects. But unless you make a point of holding periodic program self-evaluations, you may not realize how your program has changed and the steps you should take to continue to improve and protect water quality on your reservation.

At this point, you may want to consider an independent third-party program review. EPA's Program Evaluation Information Resources Web site, http://www.epa.gov/evaluate/links.htm, lists a number of organizations that can assist in conducting program evaluations.

III. Mature Program Activities

1. Seeking Additional Federal Funding Opportunities

As your program matures, you may want to investigate grant opportunities outside of EPA. There are a number of governmental agencies that provide grants to tribes. For example:

- USDA's NRCS offers grants to tribes through its Conservation Partnership Initiative. NRCS staff have worked closely with a number of tribes and have helped them identify additional funding opportunities. Information on the Conservation Partnership Initiative is available online at http://www.nrcs.usda.gov/programs/cpi/index.html.

- AIEO maintains a list of federal agencies and other organizations that may provide grants at http://www.epa.gov/indian/links.htm.

- The Administration for Native Americans (ANA), within the Administration for Children and Families in the Department of Health and Human Services, provides Environmental Regulatory Enhancement grants to tribes to develop tribal environmental projects that are responsive to tribal needs. Information on Environmental Regulatory Enhancement Grants is available online at http://www.acf.dhhs.gov/programs/ana/programs/annsumm.html.

- The Bureau of Indian Affairs (BIA), within the DOI, provides Water Resources on Indian Lands Grants to tribes to assist in the management, planning, and development of their water and related land resources. Previously funded projects have included geographic and hydrologic quantitative and qualitative analysis of water, ground water and surface water quality and quantity monitoring, aquifer classification, and stream gauging. The BIA Web site is temporarily unavailable, but you may obtain more information about this opportunity by calling 202-208-3710. In addition, you may visit the catalog of federal grant opportunities online at http://12.46.245.173/cfda/cfda.html and search for the Water Resources on Indian Lands grant opportunity.

Federal Search Engines

Grant opportunities available across the federal government are posted on http://www.grants.gov. This Web site allows users to sign up to receive e-mail alerts about new grant opportunities in relevant areas.

The General Services Administration also maintains a catalog of federal grant opportunities at http://12.46.245.173/cfda/cfda.html. You can use these Web sites to help identify a number of grants related to tribes and environmental programs.

2. Using Contractors as Appropriate to Your Needs

Mature programs should be able to manage all of their programs (including technical programs) using in-house staff. You may use contractors to provide specific or specialized technical expertise, training, or laboratory analyses, but for the most part you should now be able to independently manage all aspects of your program and conduct the majority of the work associated with the program.

3. Conducting Comprehensive Community Outreach and Public Awareness Programs

Your community outreach and awareness program should no longer be limited to informing your community about the results of your program or providing specific targeted information on selected topics. Instead, it should cover a number of topics related to your program, including information on water bodies on your reservation, volunteer activities, human health concerns, management measures, pollution prevention, education, and general information. You can also encourage the formation of volunteer groups that independently conduct activities that support your program's goals. Remember that no matter how comprehensive your program is, you will still rely on community involvement and participation to achieve the best results.

4. Conducting Program Evaluations

At this point, you should have a good understanding of the environmental conditions on your reservation, and you should be able to connect your program needs to EPA's goals and objectives. Your program evaluations should help you ensure that your program is aligned with EPA's national water quality objectives.

5. Mentoring Other Tribes and Local Governments

As your program matures, consider mentoring other tribes and local governments. Your experience could be invaluable to less-experienced tribal water quality programs that may lack the technical expertise, financial resources, and general program background you have. In some cases, adjacent local governments welcome tribal expertise.

Tribal pesticide programs are an example of an area in which coordination between tribes can yield positive results. Because pesticides may leach into ground water or be carried into streams and lakes, establishing relationships with neighboring jurisdictions is essential for promoting general water quality and establishing an adequate information base about threats to waters on your reservation. In addition, mentoring other tribes with fledgling programs may foster positive relationships and instill goodwill in neighboring communities. If you need contact information for other tribes in your region, your EPA regional office can provide it.

6. Partnering with Other Organizations

Partering with other organizations such as neighboring tribes and states, universities, private groups, local governments, watershed-based organizations, and others can help you implement your water quality protection program and achieve your program goals. In addition, you may find it useful to engage other programs within your tribe (e.g., fish and game programs, tribal planning offices) to alleviate duplication of effort, maximize resources, and expedite your program development. Sections III.4 and III.5 of chapter 5 contain more information on forming partnerships with other organizations.

Providing Mentoring to Tribes: Region 8 Water Quality Training
Fort Peck Assiniboine & Sioux Tribes, Northeast Montana

The Water Quality Training Program Project for Region 8 tribes actively began in 2002, using monies from the Section 106 Special Project Monies, with matching funds from the Fort Peck Assiniboine & Sioux Tribes' Office of Environmental Protection (OEP). The project implements a multi-phased approach to meeting the requests from the tribes within Region 8 for a water quality training curriculum taught primarily by tribal water quality professionals within the region and specifically tailored to meet tribal personnel needs.

Fort Peck Assiniboine & Sioux Tribes, working in conjunction with the Institute for Tribal Environmental Professionals (ITEP) at Northern Arizona University (NAU) and EPA Region 8 personnel, have developed and begun to implement a regional tribal water quality certification program offering professional certification on increasingly technical levels.

The certification program is loosely built around the college curriculum format based on classroom interaction time, whereby 8 hours of training leads to one credit. To progress from one level to the next, program participants are required to complete specific core classes, as well as a specific number of elective credit hours. A standardized protocol and a review board consisting of EPA personnel, tribal professionals, and educational representatives approve core and elective course curriculums. All courses implement and enforce a stringent attendance policy, pre- and post- course testing, and completion of out of class assignments.

The certification program currently offers certification to water quality staff on three separate levels: Water Quality Technician (Level I Certification); Water Quality Specialist (Level II Certification); and Environmental Specialist (Level III Certification). Core requirements for certification on these levels include classes such as the basic monitoring course, data entry/introduction to data analysis, monitoring design, advanced data analysis, and 305(b) report writing.

To date, curricula for data entry/introductory data analysis, monitoring design, basic water quality monitoring, advanced data analysis, and biological monitoring have been developed and training has been held at different locations around the region. Additional training courses and repeat training courses are planned.

Chapter 4: Monitoring, Data Management, and Data Assessment and Analysis

Introduction

This chapter will help you develop a water quality monitoring program that will enable you to achieve your program goals. An effective water quality program includes monitoring, data management, and data assessment and analysis. These activities are closely related. Once you have collected monitoring data, you will need to manage and analyze the information. You should consider all three activities when working through this chapter. As your water quality program moves from fundamental to mature activities, you should ensure that your capabilities in monitoring, data management, and data assessment and analysis advance at the same pace.

To highlight the activities required to monitor, manage data, and conduct assessment and analysis, sections I and II of this chapter address each of these program areas in separate subsections. Once you understand and implement each of these program areas, however, you should think of them as one tightly integrated part of your program. For this reason, section III of this chapter includes an integrated discussion of these topics.

A water quality monitoring program is perhaps the most important component of a water quality management program. The initial results of your water quality monitoring program will help you identify water quality problems and set program goals and objectives to address those problems. As your program grows, your monitoring program will help you measure the effectiveness of your efforts to improve water quality. You cannot make informed decisions about your water quality program without monitoring, managing, and assessing and analyzing water quality data.

EPA expects that all monitoring programs will include some basic components. Every monitoring program should have as its foundation a long-term strategy that addresses how it will meet water management needs. Your program should be driven by clear monitoring objectives, and it should be designed to allow you to meet those objectives. You should establish quality assurance (QA) and quality control (QC) procedures that are documented in a Quality Assurance Project Plan (QAPP). Your program should use a core set of water quality indicators (WQI) — measurements that you can use to assess the quality of a water body — that you can compare over time. The indicators you use can measure the physical (e.g., temperature), chemical (e.g., phosphorus, nitrogen), or biological (e.g., macroinvertebrates, bacteria) characteristics of your waters. The program eventually should grow to address all water body types (e.g., streams, lakes, wetlands, estuaries, rivers, ground water). This chapter will help you to establish a monitoring program that meets all of these requirements.

Activities Included in Chapter 4

Fundamental Program Activities

1. Monitoring	*Developing Monitoring Goals and Strategies*
	Establishing a Baseline Monitoring Program
	Developing Standard Operating Procedures
	Developing QAPPs
	Analyzing Monitoring Samples Using Outside Laboratories
	Submitting Your QAPP for EPA Review and Approval
	Incorporating Your Monitoring Results into Your Community Outreach Program
2. Data Management	*Understanding Metadata and Compiling Useful Data Sets*
	Developing Electronic Data Storage Capacity
	Managing Electronic Data
	Performing Data Validation as Part of Your QA/QC Plan
	Reporting Data to EPA
3. Data Assessment and Analysis	*Developing Data Assessment and Analysis Capabilities*
	Developing Data Display Capabilities
	Using Data to Understand Problem Areas and Trends
4. Initiating Mitigation Measures for Known Water Quality Problems	

Intermediate Program Activities

Tribes should begin these activities after having completed the relevant fundamental program activities.

1. Monitoring	*Updating Monitoring Goals, Strategies, and Objectives*
	Expanding and Refining the Baseline Monitoring Program
2. Data Management	*Updating and Upgrading Electronic Data Systems*
	Incorporating Additional Monitoring Parameters
	Using STORET or Electronically Compatible Formats
	Maintaining a Database with Graphing Capabilities
3. Data Assessment and Analysis	*Evaluating Monitoring Program Effectiveness*
	Measuring Water Quality Improvement

Mature Program Activities

Tribes should begin this activity after having completed the relevant fundamental and intermediate program activities.

1. Understanding and Using EPA's *"Elements"* Guidance

In addition to the information provided in this chapter, use the resources that EPA and other organizations have produced to develop your monitoring program. In particular:

- Tribes implementing fundamental and intermediate water quality monitoring programs should refer to *Listening to Watersheds: A Community-based Approach to Watershed Protection* (Angie Reed and Geoff Dates; River Network National Office; Portland, OR; 2003). This guidebook describes a community-based approach to protecting water resources and was written specifically for tribes. It is available online at http://www.rivernetwork.org/ltw/. In addition, tribes implementing a fundamental program should refer to EPA's volunteer monitoring guidances, available online at http://www.epa.gov/owow/monitoring/vol.html. These guidances will help tribes understand some of the terminology and concepts used in this guidance.

- Tribes implementing mature water quality programs should refer to EPA's *Elements of a State Water Monitoring and Assessment Program* (EPA 841-B-03-003), available online at http://www.epa.gov/owow/monitoring/repguid.html. It recommends 10 basic elements of a state water monitoring program. Mature water quality programs should fully incorporate all of these elements:
  1. Monitoring program strategy
  2. Monitoring objectives
  3. Monitoring design
  4. Core and supplemental WQI
  5. Quality assurance
  6. Data management
  7. Data analysis and assessment
  8. Reporting
  9. Programmatic evaluation
  10. General support and infrastructure planning

EPA encourages all tribal water quality programs, regardless of their level of sophistication, to use the *Elements of a State Water Monitoring and Assessment Program* where appropriate.

Water sampling. Photograph courtesy of Gila River Indian Community.

In addition, EPA has published a compendium of best practices for developing water quality monitoring programs, referred to as the Consolidated Assessment Listing Methodology (CALM). You may find the best practices listed in CALM a useful reference tool, particularly when developing the Assessment Reports described in chapter 8. The CALM Guidance Document is available online at http://www.epa.gov/owow/monitoring/calm.html.

QAPPs and Monitoring

EPA has established quality control (QC) mechanisms to make sure that environmental data collected under programs the Agency supports are of sufficient quantity and quality to support the data's intended use. You must meet the applicable QA and QC requirements listed in 40 CFR 31.45 to use Section 106 funds for environmental data collection through monitoring. You must develop and implement QA practices consisting of policies, procedures, specifications, standards, and documentation sufficient to produce data of adequate quality to meet project objectives and to minimize loss of data due to out-of-control conditions or malfunctions.

One of the control mechanisms EPA has developed is the Quality Assurance Project Plan (QAPP). You are required to develop a QAPP if you are conducting **any** data collection, including monitoring under a Section 106 grant. You must submit your completed QAPP before you begin any monitoring. A QAPP is a written document that outlines procedures that a monitoring project will use to ensure that the samples it collects and analyzes, the data it stores and manages, and the reports it produces are of sufficient quality to meet project needs. The QAPP should also outline the assessment or decision criteria that you will use to address your monioring objectives. The QAPP unites all the technical and quality aspects of a project (e.g., monitoring, detection limits, analytical methods, data management, data analysis, reporting) and provides a blueprint for obtaining the type and quality of environmental data and information needed.

EPA has developed guidances for developing QAPPs for all types of monitoring programs, from a simple volunteer monitoring initiative to established state programs. In particular, some tools to which you should refer include:

- EPA guidances on developing QAPPs, available at http://www.epa.gov/quality/qapps.html. Specifically, refer to *EPA Requirements for Quality Assurance Project Plans* (QA/R-5) and *Guidance for Quality Assurance Project Plans* (QA/G-5).
- EPA's *Elements of a State Water Monitoring and Assessment Program* contains information on developing QAPPs specific to monitoring programs.
- For basic information on QAPPs, consult EPA's *Volunteer Monitor's Guide to Quality Assurance Plans* (EPA 841-B-96-003), available online at http://www.epa.gov/owow/monitoring/volunteer/.
- *Listening to Watersheds*, pages 65-69, also contain information on developing QAPPs.
- Regions 1 and 9, with support from Regions 3 and 10, as well as the Tribal Air Monitoring Support Center at Northern Arizona University, have developed the Quality Assurance Project Plan Development Tool. This CD-ROM tool may be obtained by contacting your regional QAPP coordinator.
- Lastly, see the "Building Credibility" Factsheet, available at http://www.usawaterquality.org/volunteer/outreach/BuildingCredibilityVI.pdf.

QAPPs for Ground Water Monitoring

Due to regional variations in geology and hydrology, there is no one method for ground water monitoring. By establishing a comprehensive ground water QAPP with field, sampling, lab, and assessment protocols, tribes can effectively sample wells for contaminants such as metals, volatile organic compounds, and nutrients. Research into past land use as well as hydrogeological surveys of the area will supply knowledge regarding the characteristics of aquifers as well as potential sources of contamination. Sound data collection will help tribes develop the foundation they need to determine their ground water protection needs.

I. Fundamental Program Activities

1. Monitoring

a. Developing Monitoring Goals and Strategies

The primary purposes of a monitoring program are to determine the physical, chemical, and biological conditions of a water body and evaluate them against WQI. Within that context, you may conduct water quality monitoring to meet any of the program needs, goals, and objectives you have identified. (See sections I.5 and I.6 of chapter 3 for more information on identifying needs, goals, and objectives.) For example, you may conduct water quality monitoring to collect baseline data on water quality throughout your reservation or to measure the effects of a specific activity, such as construction, agricultural activities, or mining. The needs you want to address will determine your monitoring goals and strategies.

Your program may lack the time and resources to effectively monitor all water bodies on your tribe's reservation. Take this fact into account when establishing monitoring goals and strategies. Time and resource considerations may also affect the monitoring approach you take. Consider the water use habits of your tribe and your special circumstances when developing monitoring goals. If you obtain much of your water from ground water wells, but have never tested your ground water for contaminants, conducting this testing might be a priority. If you know that there are wetlands on your reservation but have never catalogued them, you might want to begin initial monitoring to assess their health.

i. Developing Monitoring Objectives

A. Collecting Existing Information

Before you can make informed decisions about your monitoring program, make sure you collect as much existing information as possible about all the water bodies on your reservation. Remember to include all the water bodies you identified in section I.4 of chapter 3. Do not focus on collecting only high-level quantitative data; qualitative information from maps, aerial photos, and reports can also provide information about water quality. Identify any gaps in information. Based on your goals, you may not need to address the gaps now, but it is important that you are aware of them. In addition, it is probably a good idea to address them in your monitoring program now or in the future.

Remember that even if you have not conducted any water quality monitoring in the past, other organizations may be able to provide you with some monitoring data for your water resources. Section I.4 of chapter 3 lists some organizations you should consult. Remember to talk to your community and collect any information its members can provide. Page 5 of *Listening to Watersheds* lists additional resources you can use. Existing state or tribal 303(d), 305(b), or integrated water quality reports may contain information on water quality on your reservation. You can view 305(b) reports online at http://www.epa.gov/305b/. In addition, EPA's Surf Your Watershed Web site (http://www.epa.gov/surf/) can help you locate and use environmental information about your watershed.

Environmental Monitoring and Assessment Program

In developing a monitoring design, you may find it helpful to consult EPA's Environmental Monitoring and Assessment Program (EMAP). EMAP is a research program to develop the tools necessary to monitor and assess the status and trends of national ecological resources. EMAP's goal is to develop the scientific understanding for translating environmental monitoring data from multiple spatial and temporal scales into assessments of current ecological conditions and forecasts of future risks to our natural resources. EMAP develops indicators to monitor the condition of ecological resources. EMAP also investigates designs that address the acquisition, aggregation, and analysis of multiscale and multitier data. The Regional EMAP (REMAP) was initiated to test the applicability of the EMAP approach to answer questions about ecological conditions at regional and local scales. Using EMAP's statistical design and indicator concepts, REMAP conducts projects at smaller geographic scales and in shorter time frames than the national EMAP program.

Tribes may find useful resources, such as information on water quality data sets, assessment methodologies, and regional information, on EMAP's Web site, http://www.epa.gov/emap/. Information on REMAP is available online at http://www.epa.gov/emap/remap/index.html.

B. Using Existing Information to Define Monitoring Objectives

Monitoring objectives drive how you implement your monitoring program. Monitoring should help you gather data that will help you achieve your goals and strategies. For example, if your goal is to determine whether specific pollution control activities are effectively protecting water quality, your objectives should include monitoring water quality in water bodies where control activities for that pollutant are in place. Using the information on your reservation's water bodies that you have collected, and considering your goals, define the objectives for your monitoring program. For each objective you identify, describe why it is important to meet the objective, what data you expect to produce to meet the objective, and who will use the monitoring data.

You should consider your overall program goals when developing your monitoring objectives. EPA's *Elements of a State Water Monitoring and Assessment Program* identifies five basic questions for a monitoring program to address. Although you may not be able to answer all these questions immediately, you should keep them in mind when developing your objectives and use them to guide the direction of your monitoring program. As your program develops, you will be able to answer more of these questions in greater detail.

1. **What is the overall water quality of water bodies?** You should determine the extent to which your waters meet your program objectives. These may include the objectives of the CWA; attainment of applicable WQS and designated uses; protection and propagation of balanced populations of fish, shellfish, and wildlife; water quality; protection of ecosystem health; maintenance of pristine waters; or protection of public health.

2. **To what extent is water quality changing over time?** You should assess the extent to which water quality has changed over time. Understanding if and how water quality has changed over time may help you identify areas of concern and determine whether protection or restoration activities your program has initiated are working.

3. **What are the problem areas, and what areas need protection?** You should identify high-quality, pristine waters that should be protected from degradation. You should also identify areas that have water quality problems that need to be addressed. If your tribe has EPA-approved WQS or tribal code in place, you can use your standards or code to identify impaired or problem areas. If your tribe does not have EPA-approved WQS or tribal code in place, you can use WQS from neighboring tribes or states as proxies to determine impairment.

4. **What level of protection do these areas need?** Over time, as you develop an understanding of the quality of your waters, you should establish a level of protection for each of the water bodies that you monitor so that you have a benchmark against which to evaluate monitoring results. For example, a tribe that has established water quality goals could use monitoring results to determine which water bodies are not meeting those goals and assess which management strategies for NPS are most appropriate.

5. **How effective are clean water projects and programs?** You should monitor the effectiveness of specific projects and overall programs. You may find it difficult, especially early in your program development, to evaluate whether a specific program is helping to reduce water pollution or protect pristine water bodies. You should keep this question in mind, however, and try to establish monitoring objectives to help you answer this question.

b. Establishing a Baseline Monitoring Program

i. Developing a Monitoring Design

Once you have established objectives, the next step in developing a baseline monitoring program is to develop a monitoring design. A monitoring design establishes the frequency of monitoring, the water bodies that will be monitored, the locations that will be monitored within the water body, the parameters (e.g., pH, temperature, macroinvertebrates) that will be sampled, and how the information will be used or displayed to answer your monitoring objective. You should use a monitoring design that meets your monitoring objectives. For example, if you are concerned with the health of your fish community, you should consider developing a biological monitoring program. If you are concerned with the health risks associated with consuming fish, you should consider taking fish tissue samples. Note that fish community and tissue analyses may be more appropriate for more established monitoring programs.

Monitoring Plan Support

Before developing a monitoring plan, be sure to contact your EPA regional monitoring coordinator, who can provide assistance, suggestions, and support to ensure its success.

Region 1		**Region 6**	
Diane Switzer	(617) 918-8377	Charlie Howell	(214) 665-8354
		Jessica Franks	(214) 665-8335
Region 2		Jon Rauscher	(214) 665-8513
Darvene Adams	(732) 321-6700	Forrest John	(214) 665-8368
		Paul Koska	(214) 665-8357
Region 3			
Eva Ammentorp	(215) 814-5265	**Region 7**	
		Lyle Cowles	(913) 551-7081
Region 4			
Jim Harrison	(404) 562-9271	**Region 8**	
		Tina Laidlaw	(406) 457-5016
Region 5		Kris Jensen	(303) 312-6237
Sarah Lehman	(312) 353-4328		
		Region 9	
		Janet Hashimoto	(415) 972-3452
		Terry Fleming	(415) 972-3462
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Gila River Indian Community

The Gila River Indian Community (GRIC) encompasses approximately 580 square miles in central Arizona, adjacent to the metropolitan Phoenix area. There are approximately 20,000 Pima and Maricopa tribal members living in the Community. The Community's water resources are influenced by seven major watersheds. Within the Community, there are approximately 20 million acre-feet of ground water, which is used industrially and commercially, and is the sole source of the Community's drinking water. The Community has more than 8 miles of perennially flowing riverine habitat, including the Salt River and the Lower Gila River, and 116 miles of ephemeral surface waters, including the Upper Gila River, the Santa Cruz River, and the Santa Rosa, Vekol, and McClellan Washes that only flow in response to precipitation. It also has more than 1,500 acres of wetlands, including the Lower Gila River Wetlands and the Pee Posh Wetlands, more than 80 miles of canals, and 20 miles of spillage and riparian areas. The current uses of the Community's surface water resources include recreation, wildlife habitat, fisheries, livestock watering, and agriculture irrigation.

GRIC's ongoing water quality investigations include surface water and ground water sampling and continuous monitoring and streambed sediment sampling. Data from these investigations undergo an extensive in-house data validation and verification review using GRIC's integrated water quality database (19,000 separate water quality analyses), and is used to advance water quality assessments, promote the development and implementation of Tribal WQS, help develop NPS management programs with data to support management decisions, and to evaluate water quality trends.

In addition, the GRIC has developed WQI to evaluate (1) support of Community Water Quality Goals and (2) effectiveness of GRIC Department of Environmental Quality (DEQ) water quality programs, as depicted in the table on the following page.

Gila River Indian Community YSI Sonde installation for continuous water quality monitoring at the Pee Posh Wetlands. Photo courtesy of Gila River Indian Community.

Gila River Indian Community (GRIC) Water Quality Indicators and Relationship to GRIC Goals			
GRIC Goal	**GRIC Sub-Goal**	**Water Quality Indicator**	**How Results are Tracked**
Clean Surface Water	Protect Aquatic Ecosystems	**Stream channel stability**	Gila/Santa Cruz Rivers and Gila River Wetlands: measure stream channel cross-sections; enter entrenchment & width/depth ratio data into database; monitor for trends.
		Change in macroinvertebrate richness	Gila River Wetlands: macroinvertebrate samples collected in 2000-2001 established baseline; future samples to be collected biannually, as funds are available; entered into database to track species composition, abundance, richness, and health against baseline.
		Changes in ambient stream chemistry (e.g., nutrients, pH, DO)	Natural perennial waters: with fixed monitoring stations, monitor field (e.g., DO, pH, TDS, SS, etc.) & laboratory (e.g., *E. coli,* nutrients, metals, etc.) parameters and enter into database; evaluate data against GRIC pathogen criteria.
	Support Designated Uses	**Miles of water bodies that support primary contact recreation**	Surface waters designated for swimming: quarterly and after storm events, collect *E. coli* samples, enter into database; evaluate data against GRIC pathogen criteria.
		Number of nutrient criteria exceedances in ambient surface water	Gila River Wetlands and other important surface waters: quarterly, collect nitrate + nitrite & total Kjeldahl nitrogen data (the sum of these two parameters provides a total nitrogen concentration result); enter results into database; graph number of exceedances.
		Number of metals criteria exceedences in ambient surface water	Natural perennial waters, e.g., Gila River Wetlands and created aquatic habitats other than canals: regular monitoring for arsenic, cadmium, copper, lead, mercury, nickel, selenium, and zinc; enter results into database; measure against criteria for protection of aquatic life; identify trends.
Clean Ground Water	Protect Human Health	**Trends in nitrate and total dissolved solids concentration in drinking water wells**	At drinking water wells representative of drinking water supply: annually, sample for nitrate and TDS; every 5 years, sample full suite of inorganics; enter into database; identify trends.
		Trends in nitrate and total dissolved solids concentration in monitoring wells	At monitoring wells representative of land use activities: annually, sample for nitrate and TDS; every 5 years, sample full suite of inorganics; enter into database; identify trends.
Quality of Life	Conserve, Restore, and Enhance Aquatic Ecosystems	**Acres of native riparian vegetation**	Gila River aquatic system: periodically, e.g., every 5 years or after habitat restoration activities, map vegetation using aerial photography and ground-truthing and compare against recent wetlands survey to evaluate the status of remaining vegetation and identify new native vegetation.

A. Selecting WQI/Parameters to be Monitored

You should define a set of indicators that you can use to assess water quality. The indicators should give you the data you need to meet your monitoring objectives.

EPA requires that you monitor and report results for basic water quality parameters depending on your tribal program's capacity. You must consider the required parameters that apply to your tribe when developing your monitoring design. The next section in this chapter provides information on those parameters. In addition, if your tribe has WQI or tribal codes in place, you can use your WQI or codes to identify impaired or problem areas. The WQI table below provides recommended core and supplemental WQI, including required monitoring parameters. In addition, the case study and chart from the Gila River Indian Community (GRIC) on pages 4-8 and 4-9 provides an example of the use of WQI in a monitoring design.

Water Quality Indicators

The chart below is taken from EPA's *Elements of a State Water Monitoring and Assessment Program*, which discusses recommended **core** and **supplemental** WQI. Core indicators provide basic information about the aquatic environment. Supplemental indicators provide specific or additional information and can be used to support a special study or screen for a potential pollutant. You may find this distinction useful when deciding parameters for which to monitor. While not all of the core indicators must be included in a tribe's monitoring program, items in **bold** are required monitoring elements depending on the level of your tribal monitoring program (i.e., fundamental, intermediate, mature). You do not need to address all parameters in your first year.

Recommended Core and Supplemental Indicators

	Aquatic Life and Wildlife	Recreation	Drinking Water	Fish/Shellfish Consumption
Recommended Core Indicators	***Condition of biological communities** (EPA recommends the use of at least two assemblages) ***Dissolved oxygen** ***Temperature** *Conductivity ***pH** ***Habitat assessment** *Flow ***Nutrients** *Landscape conditions (e.g., % cover of land uses) Additional indicators for lakes: *Eutrophic condition Additional indicators for wetlands: *Wetland hydrogeomorphic settings and functions	***Pathogen indicators (*E. coli*, enterococci)** *Nuisance plant growth *Flow *Nutrients *Chlorophyll *Landscape conditions (e.g., % cover of land uses) Additional indicators for lakes: ***Secchi depth** (part of habitat assessment) Additional indicators for wetlands: *Wetland hydrogeomorphic settings and functions	*Trace metals ***Pathogens** ***Nitrates** *Salinity ***Sediments/Total Dissolved Solids (TDS)** *Flow *Landscape conditions (e.g., % cover of land uses)	***Pathogens** *Mercury *Chlordane *DDT *PCBs *Landscape conditions (e.g., % cover of land uses)
Supplemental Indicators	*Ambient toxicity *Sediment toxicity *Other chemicals of concern in the water column or sediment *Health of organisms	*Other chemicals of concern in water column or sediment *Hazardous chemicals *Aesthetics	*VOCs (in reservoirs) *Hydrophyllic pesticides *Nutrients *Other chemicals of concern in water column or sediment *Algae	*Other chemicals of concern in water column or sediment

B. Understanding EPA's Reporting Requirements

Although tribes are encouraged to report all data they collect, tribes are required to report only the nine basic parameters listed below. Although all tribes are encouraged to report all of the nine basic parameters, tribes' abilities to monitor and report on some of the nine basic parameters may vary. Hence, EPA has classified each of the nine parameters as fundamental, intermediate, or mature based on the level of complexity required by the monitoring and reporting activities associated with that parameter. EPA regions will use these classifications as guidelines in determining reporting requirements for each tribe, but ultimately will decide which parameters a tribe is required to report on a case-by-case basis. In situations where tribes cannot monitor for all nine parameters, EPA regional offices and tribes should negotiate ways to build tribal capacity (e.g., training, technical assistance, purchase of laboratory equipment) so that the tribe can ultimately collect information on all nine parameters. See chapter 8 for more information on reporting requirements.

The nine parameters are:

Fundamental Reporting Parameters

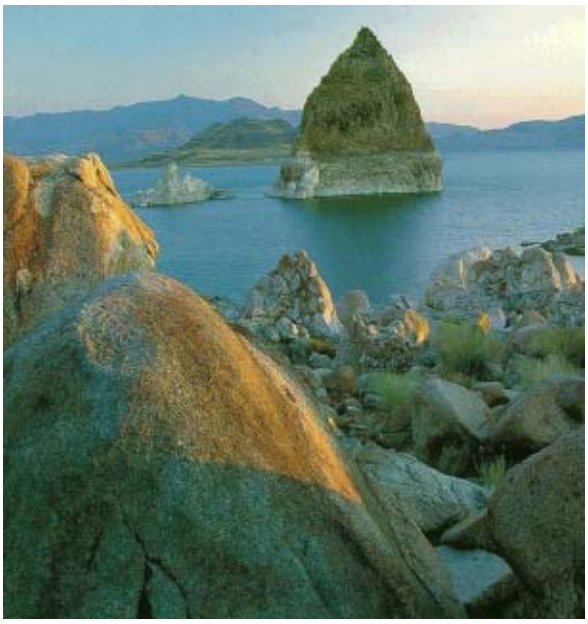
1. Dissolved oxygen
2. pH
3. Water temperature
4. Turbidity

Intermediate Reporting Parameters

1. Phosphorus
2. Total nitrogen

Mature Reporting Parameters

1. Macroinvertebrates
2. *E. coli* or enterococci
3. Basic habitat information



Pyramid Lake, Nevada. Photograph courtesy of the Pyramid Lake Paiute Tribe.

Information on these nine parameters is included below. The discussion is taken from EPA's *Volunteer Stream Monitoring: A Methods Manual* (EPA 841-B-97-003), available online at http://www.epa.gov/owow/monitoring/volunteer/stream/, and EPA Region 10's Ecological Condition of Western Cascades Ecoregion Streams (EPA 910-R-04-005), available online at http://www.epa.gov/emap/remap/html/docs/wcs.html. Please note that the *Western Cascades* reference is cited because it states clearly for the layman what each measurement parameter is for. Location of collection has no relevance in this case. The American Public Health Association (APHA) has developed a reference manual, *Standard Methods for the Examination of Water and Wastewater*, which can help you identify appropriate sampling methods for dissolved oxygen, pH, temperature, turbidity, total nitrogen, and total phosphorus or ortho-phosphorus. The methods manual is available online at http://www.apha.org/media/science.htm. In addition, many Web sites of large national vendors of kits, meters, and probes provide instructions on how to measure dissolved oxygen, pH, temperature, turbidity, total nitrogen, and total phosphorus or ortho-phosphorus. The references listed above will explain methods and technical issues as well as describe required monitoring equipment.

Dissolved oxygen: Dissolved oxygen serves as an indicator of the biological health of the water body. Dissolved oxygen concentrations vary naturally with water temperature and altitude. If more oxygen is consumed than is produced, and oxygen levels drop below their natural levels, some sensitive animals may weaken, move away, or die. Dissolved oxygen levels are affected by changes in water temperature and levels of organic materials. Changes in water temperature can occur as a result of thermal discharges from manufacturing or power plants or reduction of riparian shade. Industrial and municipal wastes can raise levels of organic materials. Consult section 5.2 of *Volunteer Stream Monitoring* for more information on dissolved oxygen. Because fluctuations in dissolved oxygen levels can occur over the course of a day, tribes must track metadata on where and when the samples were collected. Dissolved oxygen can be collected and analyzed using any of the kits readily available on the market. If your monitoring objectives require greater precision, the use of probes, meters, or contract laboratories may be necessary.

pH: pH is a measurement of water acidity. pH affects many chemical and biological processes in the water. Most aquatic animals prefer a pH range of 6.5 - 8.0. pH outside of this range reduces the diversity in the stream because it stresses the physiological systems of most organisms and can reduce reproduction. Low pH can also cause conditions that are toxic to aquatic life by allowing toxic elements and compounds to become mobile. Changes in pH can be caused by acid rain, mining activities, and wastewater discharges. pH can be measured using any of the kits readily available on the market. If your monitoring objectives require greater precision, the use of probes, meters, or contract laboratories may be necessary.

Water temperature: As noted above, temperature affects dissolved oxygen levels. It also influences the rate of photosynthesis by aquatic plants; the metabolic rates of aquatic organisms; and the sensitivity of aquatic organisms to toxic wastes, parasites, and diseases. Optimal temperature ranges depend on the species in the water body. If temperatures are outside the optimal range for the species in a water body for extended periods of time, organisms will be stressed and may die. For fish, there are two kinds of limiting temperatures — the maximum temperature for short exposures and a weekly average temperature that may vary by time of year and life cycle stage. Reproductive stages are the most sensitive to temperature changes. Causes of temperature change include weather, removal of riparian shade, dams and other barriers that confine water bodies, industrial discharges, and stormwater. See section 5.3 of *Volunteer Stream Monitoring* for more information. Temperature can be measured using thermometers available from laboratory supply stores. If your monitoring objectives require greater precision, the use of probes, meters, or contract laboratories may be necessary.

Turbidity: Turbidity measures the clarity of a water body. It is closely related to erosion and sediment that carry nutrients and bacteria into streams and lakes. Suspended particles absorb more heat, raising water temperature, which in turn affects the oxygen content of the water. When they eventually settle at the bottom of water bodies, suspended materials can also clog fish gills and smother fish eggs and macroinvertebrates. Sediment can also change the physical structure of habitats. Causes of high turbidity include soil erosion, wastewater discharges, urban runoff, farming and forestry practices, eroding stream banks, and excessive algae growth. You can find more information on sediment at http://www.epa.gov/bioindicators/aquatic/sediment.html. Turbidity data should be collected in lakes and reservoirs using a Secchi disc method, kits, probes, or meters. In streams, turbidity data should be collected using a turbidity tube, kits, probes, or meters.

Total phosphorus: Phosphorus is an essential nutrient for plants and animals, which is why it is often an ingredient in fertilizers. Because it is naturally in short supply (i.e., the “limiting nutrient”) in most fresh water bodies, even small increases in phosphorus can cause undesirable consequences such as algae blooms, accelerated plant growth, and low dissolved oxygen (decomposition of additional vegetation will consume more oxygen). Phosphorus is considered limiting in most fresh water systems because it is not as abundant as carbon and nitrogen, which are available in the atmosphere. Sources of phosphorus include soil and rocks, wastewater treatment plants, runoff from fertilized lawns and cropland, runoff from animal manure storage areas, disturbed land areas, drained wetlands, water treatment, decomposition of organic matter, and commercial cleaning preparations. Total phosphorus and ortho-phosphorus may be measured using kits, probes, or meters, or by using a contract laboratory.

Total nitrogen: Plants and animals need nitrogen, but excess nitrogen can cause low levels of dissolved oxygen and alter the types of plants and animals in the water body. The forms of nitrogen most commonly found in water are ammonia, nitrates, and nitrites. Sources include wastewater treatment plants, runoff from fertilized lawns and croplands, failing septic systems, runoff from animal manure and storage areas, and industrial discharges that contain corrosion inhibitors. Total nitrogen may be measured using kits, probes, or meters, or by using a contract laboratory. Total nitrogen is the sum of total kjeldahl nitrogen (TKN), ammonia, and nitrate-nitrite. It can be derived by monitoring for TKN, ammonia, and nitrate-nitrite individually and adding the components together, but you can also measure total nitrogen directly using kits readily available on the market.

Macroinvertebrates: Macroinvertebrates are indicators of the biological integrity of a water body. The numbers of certain species in a water body can be compared to established indices to determine the health of a stream. Macroinvertebrates respond to different stressors in different ways, so it is often possible to use the macroinvertebrate population to determine what kinds of stressors are affecting the water body. Depending on your program's characteristics and capabilities, you can use different methods to measure macroinvertebrates. Methods range in complexity from using a net and manually counting macroinvertebrates to using a laboratory to conduct population analyses. Work with your EPA regional office to establish which method you should use. EPA recommends a multihabitat approach using a D-frame net (500-micron opening mesh) collecting, counting, and identifying a minimum of 200 macroinvertebrates. Family-level ID (and in some cases species-level ID) is ultimately expected, but starting at the order level is acceptable for programs that have not previously collected macroinvertebrate data. Many local nonprofit or state agencies offer free training on macroinvertebrate identification, as well as QA/QC certification. EPA encourages tribes to target collecting data on at least two assemblages (e.g., macroinvertebrates and fish), and developing baseline condition information for their biological sampling programs. Several additional acceptable collection methods are described in EPA's *Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers: Periphython, Benthic, Macroinvertebrates, and Fish, Second Edition*, available online at http://www.epa.gov/owow/monitoring/rbp/, and chapter 4 of EPA's *Volunteer Stream Monitoring: A Methods Manual*, available online at http://www.epa.gov/owow/monitoring/volunteer/stream/. Other user-friendly macroinvertebrate identification guides include *Aquatic Entomology: The Fishermen's and Ecologists' Illustrated Guide to Insects and their Relatives* (McCafferty, W.P.; Boston, MA; Science Books International; 1981) and *A Guide to Common Freshwater Invertebrates in North America* (Voshell, J.R.; Blackburg, VA; The McDonald & Woodward Publishing Company; 2002).

Macroinvertebrate Sampling. Photograph courtesy of Gila River Indian Community.

***E. coli* or enterococci**: *E. coli* and enterococci are used as indicators of the presence of pathogens in drinking and recreational waters. They indicate the possible presence of disease-causing bacteria, viruses, and protozoans. If pathogens are present, fishing and swimming in the water may cause health risks. These pathogens can also cause cloudy water, unpleasant odors, and increased oxygen demand (reducing levels of dissolved oxygen). Sources of bacteria include wastewater treatment plants, septic systems, stormwater runoff, animal carcasses, and runoff from animal manure and manure storage areas. You can find more information about pathogens at EPA's Agriculture 101 Web site, http://www.epa.gov/agriculture/ag101/impactpathogens.html. Enterococci levels should be monitored in marine and fresh waters. *E. coli* levels should be monitored in fresh waters. *E. coli* and enterococci levels can be measured using any of the kits readily available on the market and an incubator. Samples can also be collected and sent to a laboratory for analysis. The APHA *Standard Methods* manual referenced above and EPA's Microbiology Web site (http://www.epa.gov/nerlcwww/) provide EPA-approved standard methods and examples of test kit use. You can also review Web sites of major national vendors.

Basic habitat information: Basic habitat information refers to physical attributes of a water body and its surrounding area that influence its condition. Physical habitat varies naturally, as do biological and chemical characteristics. Degradation of aquatic habitats by human activities, however, is recognized as one of the major causes of water pollution and water quality impairment. More information on basic habitat information measures can be found in chapter 4 of EPA's *Volunteer Stream Monitoring: A Methods Manual*, available online at http://www.epa.gov/owow/monitoring/volunteer/stream/, and in EPA's *Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers: Periphyton, Benthic, Macroinvertebrates, and Fish, Second Edition*, available online at http://www.epa.gov/owow/monitoring/rbp/. These manuals describe several habitat assessment methods. Any of the methods listed for habitat assessment are acceptable, but EPA expects that tribes will progress from simpler methods to more complete assessments as programs mature. State agencies may have modified EPA's protocols to develop habitat assessment procedures on an ecoregion basis (or other scale). Many states have placed monitoring protocols and documents on their agency Web sites. These tools may be useful for tribal programs.

Slump erosion, Nemadji River Basin Wisconsin, USDA Natural Resources Conservation Service. Photo courtesy of the EPA Great Lakes National Program Office.

C. Determine Monitoring Frequency of Each WQI/Parameter

When determining the monitoring frequency for each WQI/parameter, certain factors should be considered, including cost, time, resources, accessibility of monitoring site(s), seasonal flows and conditions, and the significance of each WQI. Conditions in water bodies change over the course of a day, from season to season, and from year to year (page 19 of *Listening to Watersheds* has examples of how water quality conditions can vary based on when you collect your samples). These changes can be the result of natural variability (e.g., seasonal change, drought) or variability caused by human activity (e.g., construction, agriculture). Pages 41-44 of *Listening to Watersheds* contain some general information that will help you decide when and how often to collect your monitoring samples. Be sure to take into account index condition considerations as appropriate. For example, threshold values for trophic state indices and biological metrics can be calibrated to specific periods of time.

D. Select Monitoring Sites

The approach to selecting the water bodies that will be monitored and the monitoring locations within each water body should fall into one of the three categories described below. The census and probability-based approaches may be most appropriate for tribes with more mature water quality programs, but you should use whichever approach makes most sense for your program given its goals and the resources you have available.

- **Census**: This approach means every water body on a reservation will be monitored.
- **Probability-based monitoring**: In this approach, your survey design will be based on some form of random selection of sites or sampling location. This approach eliminates the potential for sampling bias towards waters with known problems. A probability-based design allows the extrapolation from a relatively small sample of monitored sites to the entire population of water body types covered by the design.
- **Judgmental or targeted assessment**: In this approach, you will place monitoring sites at specific locations to meet a pre-determined purpose. Each site is selected on the basis of specific requirements that meet monitoring objectives. The selection process may consider environmental features (e.g., flow), human population densities, and ease of access to the site.

Use the approach that most closely reflects your monitoring objectives, taking resource and time considerations into account. Pages 29-37 of *Listening to Watersheds* contain information on selecting monitoring sites.

E. Determine How Monitoring Data Will Be Used and Displayed

To determine how you will use and display your monitoring data, you should consider how it will help you measure your progress in meeting your monitoring objectives, identify trends, and address water quality concerns. You also may want to consider your target audience(s). See section I.3 of this chapter for more information on data use and data display.

c. Developing Standard Operating Procedures

Once you have decided what parameters you will monitor and where you will collect your monitoring data, you should decide when and how often you will collect your samples and develop proper procedures for sample collection, storage, preservation, tracking, chain of custody, QA, and analysis. You will also need to set procedures for sampling equipment maintenance, including calibration. These procedures are known as standard operating procedures (SOPs). SOPs are documents that describe activities that are of a routine and/or repetitive nature. Their objective is to achieve consistency and uniformity when performing tasks. They are also useful in training staff. Your SOPs should include procedures for every parameter you are monitoring, including parameters measured on-site using field instruments (e.g., water temperature, stream flow) and parameters measured in a tribal laboratory (e.g., total solids). Laboratories also use SOPs in their work, and in some cases it may be useful for the tribe to review commercial laboratories' SOPs as they may contain quality control information not found in the laboratories' QA plans. If you need to use an outside commercial laboratory, other tribes in your region can help you identify qualified labs in your area that may be able to provide sample analysis.

Penobscot Indian Nation Department of Natural Resources staff cross-checking calibration of dissolved oxygen meters before sampling Penobscot River. Photo courtesy of the Penobscot Indian Nation.

EPA has developed methods manuals for many types of monitoring. The manuals include general information for monitoring all parameters as well as parameter-specific information on sampling and equipment considerations and proper collection and analysis procedures. You should use these methods manuals to help you develop your SOPs. These documents are available online at http://www.epa.gov/owow/monitoring/volunteer/.

Wetlands Monitoring

Because of their composition, wetlands are more complicated to monitor than most surface water bodies. Wetlands monitoring consists of several components:

- Establishing baseline condition of wetlands, including their extent and condition
- Measuring the physical and chemical properties of the wetland, including pH, color, turbidity, dissolved oxygen, total phosphorus, and sediment samples
- Determining the hydrogeomorphic setting and function
- Cataloguing biodiversity, the presence of rare or endangered species, and items of cultural significance
- Inventorying local contamination sources, such as stormwater culverts and septic fields

Tribes conducting wetlands monitoring should consult EPA Region 9's *Wetlands Quality Assurance Project Plan Guidance*, available online at http://www.epa.gov/Region9/qa/pdfs/wetlandsqapp-04.pdf, which is designed to assist in documenting procedural and data requirements for projects involving environmental measurements and wetlands monitoring. For information on beginning a wetlands monitoring program, refer to *Volunteer Wetland Monitoring: An Introduction and Resource Guide* (EPA 843-B-00-001) at http://www.epa.gov/owow/wetlands/monitor.

d. Developing QAPPs

All EPA-funded projects for the collection of data must have an approved QAPP before **any** monitoring activities may begin. As noted above, the QAPP is a written document that outlines the procedures that a monitoring project will use to ensure that the samples collected and analyzed, the data stored and managed, and the reports produced are of sufficient quality to meet project needs. QAPPs cover monitoring, data management, and data analysis and assessment activities.

Your QAPP must include data quality objectives (DQOs). DQOs are the qualitative and quantitative statements that clarify study objectives, define the appropriate type of data to meet the objectives, and specify tolerable levels of potential decision errors that will be used as the basis for establishing the quality and quantity of data needed to support decisions. DQOs define the performance criteria that limit the probabilities of making decision errors by considering the purpose of collecting data, defining the appropriate type of data needed, and specifying tolerable probabilities of making decision errors.

Use the Web sites listed on page 4-4 and contact your EPA regional office and quality assurance manager for more information on developing your QAPP. EPA's *Guidance for the Data Quality Objectives Process* (EPA 600/R-96/055), available online at http://www.epa.gov/quality/qs-docs/g4-final.pdf, contains more information on DQOs.

e. Analyzing Monitoring Samples Using Outside Laboratories

In some cases, you may lack the in-house expertise or equipment to analyze some water quality samples or perform taxonomic identification and enumeration of biological samples. In these cases, you will have to send your samples to an outside laboratory for analysis. You should develop SOPs to document how you will track samples that you ship to laboratories, including chain-of-custody procedures and procedures for field crews to follow when collecting, transferring, storing, and shipping samples. These SOPs should be included with the tribe's QAPP. If SOPs are not developed, the tribe should document how these activities will be carried out in its QAPP.

From *Integrating Quality Assurance into Tribal Water Programs*, EPA Region 8 Water Management Division, Water Quality Branch, page 8:

When choosing a laboratory for analyzing your water quality samples, it is best to conduct interviews. Provide the laboratory with a list of questions regarding the analyses you anticipate you will need and talk directly with the laboratory manager. When you develop a contract, include a specific period of time that the contract will cover, the scope of work (including materials the laboratory will furnish), terms for payment, a provision for giving both the tribe and EPA the right to audit the laboratory, and other terms and conditions as required or recommended by the tribal program. Make sure to agree on turnaround time in advance. When contracting with a laboratory, make sure you get a copy of its QA/QC plan and include it as an appendix to your QAPP.

You should also discuss the format in which your laboratory will provide your monitoring results. Discuss if the lab can supply the data in a format compatible with your data management system or STORET. You will need to report certain data elements in a STORET-compatible format; receiving results from your lab in this format will reduce your data management burden. See chapter 8 for more information on data reporting requirements.

f. Submitting your QAPP for EPA Review and Approval

Once you have established what parameters you will monitor, how and when you will collect samples, and what procedures you will use to handle your samples, and have incorporated them into your QAPP, you should submit your QAPP to your EPA grant project officer, who will forward it to the appropriate regional staff for review and approval (EPA Order 5360.1 A2). Upon EPA approval, you should begin implementing your monitoring program. To the extent possible, you should utilize the design, implementation plan, and sample collection procedures you have developed. If you do not follow your procedures, you may find that the quality of your data does not meet your expectations or that you do not have enough data for your analysis and assessment activities.

Over time, you may find that you need to modify or refine your monitoring program to address new water quality issues or concerns. For example, you may need to update your sample collection procedures to include new parameters. Section II.1 of this chapter contains more information on considerations for updating your monitoring procedures.

g. Incorporating Your Monitoring Results into Your Community Outreach Program

If you are conducting any public outreach activities (discussed in section I.12 of chapter 3), use monitoring data to reinforce your message. You should use the data analysis tools discussed in section 3, below, to summarize and report data in a way that makes sense to your community. Your community is more likely to share your concerns or understand your accomplishments if you can provide quantitative data that support your claims. If you have not yet begun to conduct public outreach, consider reporting your monitoring results to your community.

2. Data Management

Monitoring data will not be especially useful to your program unless you are able to store your results (and information about your results) in a format that allows you to manipulate, summarize, and analyze them. The process of converting your monitoring results into a useful set of data that you can use to make decisions about your program is known as data management. This section provides information on managing your data, including how to compile useful data sets, store and manage your data in an electronic format, validate your data, and report your results. Pages 71-73 of *Listening to Watersheds* also contain information on data management.

a. Understanding Metadata and Compiling Useful Data Sets

Metadata are "data about data," that is, information about a specific water quality sample that helps to provide context for the sampling activity. Metadata contain information about when, where, why, and how a water quality sample was collected. Recording metadata is important for a number of reasons:

- Metadata help you improve your analysis of water quality conditions. As noted in section I.1.b of this chapter, conditions in water bodies change over the course of a day, from season to season, and from year to year. If you do not have information that helps you identify the context for your samples, you will not be able to make comparisons among water bodies or across time.

- Metadata increase the validity of your results. The more information you can provide about the circumstances surrounding a water quality result, the more weight your reports will carry.

- Metadata can help you understand unexplained or unusual results. For example, if you knew when a sample was collected, you could tie an unexpectedly high result to a reported spill.

- Although you collect water quality samples to help you meet your current goals and objectives, you may want to use the data for different purposes in the future. To decide whether you can use the data for other purposes, you will need to understand the context in which the sample was originally collected.

- The technician who collects a water sample and the staff of your program at the time of sample collection know when, where, how, and why they are monitoring, but as time passes and staff change, that information will be lost unless you track it. Collecting metadata will help future program staff members better understand past data.

- If you share your data with any other tribal entity, EPA regional offices, or states, metadata will make the sample results more useful to them.

When monitoring, you should record metadata such as the location where you collected each sample (e.g., longitude and latitude, water body), the conditions at the time of collection (e.g., water temperature, flow, atmospheric conditions), units for each parameter, replicate information, and the date and time. Also record information such as the reason you collected the sample (e.g., to determine if phosphorus poses a threat to a particular water body), what method you used to analyze the sample, and the method's detection limit. EPA Headquarters will work with tribes and EPA regional offices to develop a standard format for data reporting, including metadata. Standard templates will be available through EPA regional offices before tribes begin to implement the reporting requirements outlined in this document.

What is Georeferencing?

Georeferencing describes the process of locating an event according to its latitude and longitude. Georeferencing has become more prominent in recent years due to the increasing availability of Global Positioning Systems (GPS) and Geographic Information System (GIS) tools designed to facilitate this process. GPS units allow technicians in the field to determine the latitude and longitude of a position. Once a water body has been georeferenced using a GPS unit, the data can be entered into the GIS, which is a computer system for capturing, storing, manipulating, analyzing, and displaying data related to positions on the Earth's surface. Once a water body has been georeferenced, the relationship between it and its location can be used to map and display information about it. Using GIS tools to analyze data can help you spot and track information related to a water body's location. Visit http://www.epa.gov/owow/monitoring/georef/ for more information on georeferencing.

b. Developing Electronic Data Storage Capacity

To use and analyze your data effectively, you should store data in a way that allows them to be easily organized, summarized, and manipulated. Electronic spreadsheets will allow you to easily store data. Many spreadsheet-based software programs you can use for this purpose are commercially available. Some of these programs also include tools (e.g., graph-building, calculator, and modeling functions) that will help you analyze, manipulate, and report your data. Pages 71-90 of *Listening to Watersheds* provide more information on electronic data storage.

Depending on your familiarity with computers, you may want to take a basic spreadsheet or database training course. You can find courses through local community colleges, night classes at high schools, or commercial computer training centers.

EPA expects that all required tribal data ultimately will be submitted to its water quality data warehouse, but recognizes that in many cases tribes lack the financial and technical resources to upload their data. In these cases, EPA will assist tribes with the process.

c. Managing Electronic Data

Once you can store your data electronically, you should develop procedures to manage your electronic data. Procedures should include information on:

- Checking field and lab forms for accuracy and completeness
- Entering the information into your electronic software program
- Evaluating data and producing reports
- Reviewing data after entry
- Backing up electronic data

Backing Up Electronic Data

You need to back up your data regularly to make sure that you do not lose information if your electronic files are lost or destroyed because of a computer failure, software problem, or user error. You can back up data in a number of ways, such as copying the information to a CD, external hard drive, or flash drive or by electronically transmitting your data to another computer. You should store a backup copy of your data offsite to prevent loss in case your office is damaged. Some computer systems include built-in backup tools. Consult the user manual for your computer to see if your system includes this capability.

EPA's STORET water quality data warehouse can also serve as an off-site data repository. Tribes should consider reporting as much data as possible to make sure that the data are not lost if their internal data management system fails.

d. Performing Data Validation as Part of Your QA/QC Plan

You should establish a procedure for reviewing your data and making decisions about accepting, rejecting, or qualifying them. Procedures can include:

- Comparing entries from field data sheets to information entered into your electronic spreadsheets
- Looking for data gaps
- Examining results for unexpectedly high or low results
- Checking calculations
- Correcting errors
- Comparing project data to specified QA/QC criteria
- Calculating precision and accuracy of instruments, placing this information in your metadata file, and submitting this data to EPA
- Reviewing field data sheets for completeness and accuracy before leaving the field
- Reviewing QC sample results to ensure acceptance criteria (either established by the tribe or defined in the laboratory's QA plan and SOPs) were met

You should include this information in your QAPP. Chapter 4 of EPA's *The Volunteer Monitor's Guide to QAPP* contains more information on data validation and QAPPs. Your data should be validated according to your procedures before you submit it to EPA.

e. Reporting Data to EPA

Your region will require you to submit certain data elements to EPA based on the agreed upon schedule and format in your work plan. In addition, you will be required to submit your data in an electronic format agreed upon with your EPA regional office. Standard templates for data reporting will be available through EPA regional offices. You will also be required to submit an Assessment Report to EPA to demonstrate how you have interpreted your data to meet your objectives. See chapter 8 for more information on these reporting requirements.

3. Data Assessment and Analysis

a. Developing Data Assessment and Analysis Capabilities

Monitoring results cannot be used with confidence unless you assess your data. **Data assessment** is the process in which you evaluate field, lab, and data management activities, organizations (e.g., labs), and personnel. The assessment can include evaluations of performance (e.g., sample collection techniques), systems (e.g., equipment and analytical procedures), and data quality (e.g., comparisons of actual data results with project quality objectives). You should decide ahead of time how your program will correct any problems that you identify during your assessments. Corrective actions could include calibrating equipment more frequently or providing more training to your staff.

Data analysis is the process through which monitoring results are evaluated to determine what they reveal about the condition of a water body. You will need to summarize your data and put them into a manageable form to prepare it for analysis.

Data analysis should provide answers that address monitoring objectives and goals. During data analysis, you should also evaluate whether you need more or different kinds of data. *Listening to Watersheds* lists some typical ways in which data are analyzed, including:

- **Status**: comparing indicators against WQS or water quality goals you have established for a water body
- **Trends**: comparing an indicator or indicators at one site over time
- **Site comparison**: comparing an indicator or indicators at different sites at the same time

Pages 75-90 of *Listening to Watersheds* have more information on data assessment and data analysis.

b. Developing Data Display Capabilities

You may find visual displays of the results of your analysis useful in understanding your data and presenting it to your community. As noted above, many software packages used to store data can quickly and easily produce graphic displays such as bar graphs, line graphs, and pie charts. Pages 78-80 of *Listening to Watersheds* have more information on developing charts and graphs.

c. Using Data to Understand Problem Areas and Trends

i. Using Data from Additional Sources

Your monitoring data are not the only data you can use to evaluate the condition of your water bodies. If available, incorporate other data such as the water body's geological characteristics, beach closures, fish consumption advisories, fish kills, and data from upstream and downstream states or tribes into your analysis. You can consult the organizations listed in section I.4 of chapter 3 or other environmental programs within your tribe to obtain this information. If your tribe has completed a source water assessment for its public water supplies, you can also use it as a resource. In addition, EPA maintains a number of databases containing data related to water quality online. You can access these databases at http://www.epa.gov/owow/data.html. EPA's Surf Your Watershed Web site (http://www.epa.gov/surf/) also can help you locate and use environmental information about your watershed.

Note that if data from secondary sources is used in decision making, then the tribe's QAPP must include a discussion of how the data from the secondary source will be reviewed and determined suitable for the purpose for which the tribe intends to use it.

Once you have reviewed all of the available data, including your monitoring results, you should understand some of the problems facing your water resources. The next sections will help you identify possible causes of problems and sources of pollution.

ii. Understanding Common Causes of Water Quality Problems

A number of factors can contribute to water quality problems in surface water and ground water. In addition to the parameters listed in section I.1.b of this chapter, some additional common pollutants and stressors include:

Metals: Metals can reduce reproductive success, prevent proper growth and development, and even kill fish and shellfish. In addition, some metals accumulate in fish and shellfish, affecting humans, animals, and birds that eat them. More information on metals is available online at http://www.epa.gov/bioindicators/aquatic/pollution.html.

Monitoring Activities on the Southern Ute Indian Reservation

The southwestern region of the United States has been experiencing extreme drought and fire conditions and as such, the Missionary Ridge Fire Complex affected La Plata County, Colorado, where the Southern Ute Indian Reservation is located, during summer 2002.

An initial Burn Area Emergency Rehabilitation (BAER) report was completed and at that time a total of $39.8 million was expended for fire suppression and air support (USFS BAER Report, July 2002). At that time mitigation measures were initiated by the BAER Mitigation Team to minimize the impact to the Animas, Florida, and Pine Rivers when the monsoon pattern began. Unfortunately, all three rivers were impacted with heavy sediment loading as a result of numerous mudslides that occurred and are still occurring within the burn area. Current water uses on these streams include Tribal and non-member agricultural and domestic uses. The State of Colorado has designated the Pine, Florida, and Animas Rivers as agriculture and drinking water supply, Aquatic Cold I, and Recreation I.

Along with the sediment and organic matter being washed into the streams from the burned areas, the drought has resulted in low flows, and thus indications of nutrient enrichment on the Pine and Animas Rivers. WQ staff have witnessed water quality impacts such as ash and debris material within the Pine, Florida, and Animas Rivers and have been monitoring for macroinvertebrates, dissolved oxygen, turbidity, pH, conductivity, temperature, pebble counts, and measures of embeddedness since the fire was officially contained in July 2002.

For the long-term monitoring program, it is important that the effects of the fire and drought be distinguished from anthropogenic effects. Monitoring for the effects of the fire are conducted in parallel with monitoring for the effects of nutrient enrichment. Tribal WQ staff are participating with other entities such as EPA regions 6 and 8, Bureau of Reclamation (BOR), Ute Mountain Ute Tribe, New Mexico's Surface Water Quality Bureau (SWQB), Colorado Department of Public Health and Environment (CDPH&E), Colorado Department of Wildlife (CDOW), and several special interest groups to address this issue on the Animas River.

Ashy sediment clogged irrigation diversions and embedded aquatic habitat. Photograph courtesy of EPA Region 8.

To complete a comprehensive study of the long-term impact of fire and anthropogenic effects, monitoring has been conducted and will continue for a number of years. Based on document searches and long-term research of the effects of fires on un-dammed streams conducted in Idaho and Yellowstone National Park, the effects of Missionary Ridge fires may be observed for approximately 8 to 10 years.

The successful development of the EPA-funded Southern Ute Tribal Water Quality Program laid the foundation for participation in this project. The Tribe provided valuable insight, access, and water quality data that would not have been available to this emergency response team without years of sustained water quality data collection and management by the Southern Utes. The Southern Utes have proven themselves as leaders in tribal water quality data collection and assessment, and their expertise have been invaluable in the Missionary Ridge Fire Complex BAER Team post-fire assessment.

Pesticides: Pesticides are organic compounds that are used in agriculture, animal feeding operations, and other activities. Pesticides are toxic to many animals and may bioaccumulate in the environment. Any use of pesticides in or near surface water bodies or aquifer recharge areas may lead to residues in water, fish, and shellfish. Sources of pesticides include crop and urban runoff. You can find more information about pesticides at EPA's Office of Prevention, Pesticides, and Toxic Substances Web site, http://www.epa.gov/oppts/ and EPA's Office of Pesticide Programs Web site, http://www.epa.gov/pesticides/.

Salinity: Salinity is a measure of the total salt content in water. Excess salinity can affect wildlife and the suitability of water for drinking. Agricultural irrigation can cause excess salinity. Urban and industrial uses can also cause salinity problems. Salt water intrusion into fresh water sources is a related problem. Salinity measurements are often included in measurements of Total Dissolved Solids (TDS). For more information on salinity, see http://www.epa.gov/watrhome/you/salty.html.

Flow Alterations: Activities such as dam construction and water withdrawals can alter the natural water flow. Flow alteration threatens water bodies in different ways. Reduced flows impair the ability of water bodies to flush out nutrients and organic matter, thereby increasing contaminant concentrations. In addition, lower water levels can also affect aquatic species that require specific water levels to survive. Problems such as degradation of river and stream bottoms may also occur when water flow increases. Impervious surfaces can limit ground water recharge, diminishing the quantity of ground water available for use and/or increasing the cost of obtaining ground water. More information on flow alterations is available online at http://www.epa.gov/bioindicators/aquatic/hydrology.html.

iii. Understanding Common Sources of Impairment

EPA's guidance for tribal water quality reporting, *Knowing Our Waters: Tribal Reporting under Section 305(b)*, identifies the most common sources of water quality impairments. These activities (listed below) can potentially cause the impairments listed in the previous section:

Channelization: Changes created by channelization and channel modification can be problematic if they alter environmental conditions. Channel modification can change the natural flow of water as well as water temperature and sediment characteristics, which in turn can affect water quality and the wildlife in the water body. More information on channelization is available online at http://www.epa.gov/owow/nps/MMGI/Chapter6/ch6-2a.html.

Feedlots: Animal wastes from large, industrial feedlot operations are among the greatest threats to our nation's waters. Oxygen-demanding substances, ammonia, nutrients (including nitrogen and phosphorus), solids, pathogens, and odorous compounds are the pollutants most commonly associated with animal waste. Manure is also a potential source of salts, trace metals, and, to a lesser extent, antibiotics, pesticides, and hormones. Animal waste and wastewater can enter water bodies from spills or breaks of waste storage structures (due to accidents or excessive rain). More information is available online at http://cfpub1.epa.gov/npdes/home.cfm?program_id=7.

Irrigated Cropland: Irrigation waters transported in open, unlined canals can seep into adjacent soils, eventually carrying soluble pollutants into ground or surface waters. Too much irrigation results in a portion of applied waters running off the land into surface waters or seeping through the soil and eventually ending up in surface or ground waters. Pollutants carried by irrigation waters can include sediment and organic solids, nutrients (including nitrogen and phosphorus), chemicals, metals, a portion of the applied pesticides, salts, bacteria, viruses, and other microorganisms. You can find more information on irrigated croplands online at http://www.epa.gov/ow/you/chap2.html.

Land Disposal of Hazardous Waste: Currently, about 23 million tons of hazardous waste are disposed of on land each year. Land disposal can be either in or on the ground — in a landfill, injection well, or other land-based unit. Even though landfill units are equipped with safeguards, when hazardous waste is not properly treated before land disposal, it can contaminate ground water. Rain can penetrate and pass through hazardous waste and can leach out and carry hazardous chemicals into the ground water. For more information, see EPA's Web site on land disposal, http://www.epa.gov/epaoswer/hazwaste/ldr/snapshot.htm.

Municipal Discharges: Wastewater is considered a potential source of pollution because it may — especially if it is untreated or only partially treated — contain organic and inorganic materials that can be hazardous to humans and other life forms. Treated, untreated, or partially treated wastewater may also contain small amounts of radiation or toxics that increase the temperature of waters, affecting aquatic wildlife and habitat. Discharged wastewater, especially if it is untreated or partially treated, may reduce the amount of dissolved oxygen in the receiving stream and can be a source of *E. coli*, enterococci, and other pathogens. For more information on wastewater management and municipal discharges, visit EPA's Office of Wastewater Management (OWM) Web site, http://www.epa.gov/owm/.

Pastureland: Overgrazing exposes soils, increases erosion, encourages invasion by undesirable plants, and reduces the filtration of sediment necessary for building streambanks, wet meadows, and floodplains. This may result in nutrient runoff and sediment deposition in nearby waterways. You can find more information on pastureland and other potential sources of agricultural pollution at http://www.epa.gov/region08/water/nps/npsag.html.

Forestry: Studies show that a timber harvest disturbs 8-10 percent of the total area in road construction and landing sites. These areas can contribute to erosion, soil loss, and sedimentation. Forestry can also increase water flow through cleared sites and cause erosion along streambanks. EPA's NPS Web site (http://www.epa.gov/owow/nps/forestry.html) contains more information on forestry.

Loading logs on truck for transporting to milling plant, Superior National Forest Minnesota USDA Forest Service, Superior National Forest. Photo courtesy of the EPA Great Lakes National Program Office.

Streambank Modification: Shoreline and streambank erosion can result in excessively high sediment loads and increased turbidity and nutrient levels that can adversely affect aquatic vegetation, shellfish beds, and tidal flats. More information on streambank modification is available online at http://www.epa.gov/bioindicators/aquatic/hydrology.html.

Surface Mining: Mining creates acid mine drainage, a metal-rich water formed from the chemical reaction between water and rocks containing sulfur-bearing minerals. The runoff formed is usually acidic and frequently comes from areas where ore or coal mining activities have exposed rocks containing pyrite, a sulfur-bearing mineral. Metal-rich drainage can also occur in mineralized areas that have not been mined. Mine drainage can contaminate drinking water and disrupt the growth and reproduction of aquatic plants and animals. For more information on mining, see EPA's NPS Web site, http://www.epa.gov/region3/acidification/what_is_amd.htm.

4. Initiating Mitigation Measures for Known Water Quality Problems

Once you have a grasp of possible causes and sources of water quality problems in your water bodies, you can begin to address them. If the problems stem from point source dischargers (e.g., industrial facilities or publicly owned treatment works), the discharges can be regulated through National Pollutant Discharge Elimination System (NPDES) permits. See section III.5 of chapter 7 for more information about the NPDES program. If a variety of sources are causing the problem, NPS pollution can be controlled through management measures. NPS and management measures are discussed in chapter 5. Remember that structural management measures and management measures requiring construction are not allowable activities under Section 106 grants.

In many cases, (e.g., if facilities or events occurring upstream and/or on private property over which the tribe has no control are contributing to a water quality problem), the causes and sources of impairment may be difficult for tribes to address. In these cases, tribes may wish to cooperate with other local governments and consider implementing a watershed-based plan or other NPS control activities.

Mitigation Measures for Ground Water

Many tribes obtain much of their drinking water from ground water wells and therefore monitor and sample their ground water to determine its quality. Samples from these wells can help tribes that rely on ground water to understand its characteristics and quality. Several tribes whose monitoring results revealed ground water contamination have developed wellhead protection programs. Wellhead protection programs are programs designed to protect the "wellhead"—the surface and sub-surface area surrounding a ground water well—from contaminants. Wellhead contamination comes from a variety of sources, including septic tanks, landfills, animal waste lagoons, and agricultural runoff. Identifying wellhead areas and developing management strategies to protect them are critical activities for tribes that rely on ground water.

Source Water Assessment Programs (SWAP) are another effective component of ground water protection. Source water assessments consist of delineating a source water protection area, conducting a contaminant source inventory, determining the susceptibility of the public water supply to contamination from the inventoried sources, and releasing the results of the assessment to the public. For more information on these programs, go to http://www.epa.gov/safewater/protect/swap.html. Chapter 5 contains more information on source water assessments.

Even if monitoring reveals that your ground water has no substantial contamination, it is important to be proactive to ensure that your ground water remains pristine.

II. Intermediate Program Activities

1. Monitoring

a. Updating Monitoring Goals, Strategies, and Objectives

As your program goals change, you should modify your monitoring goals and objectives. You should review your monitoring goals, strategies, and objectives during your program self-evaluation. See section I.14.b of chapter 3 for more information on conducting a program evaluation. Use the questions presented in section I.1 of this chapter to determine whether you should update monitoring goals, strategies, and objectives. Remember that as your program matures, your goals and objectives should tie to CWA goals and objectives. See EPA's *Elements of a State Water Monitoring and Assessment Program* for more information on CWA goals and objectives. In addition, consult EPA's *Guidance for the Data Quality Objectives Process* (EPA QA/G-4 available online at http://www.epa.gov/quality/qs-docs/g4-final.pdf) for more information on defining objectives.

b. Expanding and Refining the Baseline Monitoring Program

As your monitoring program expands and your goals and objectives change, remember to evaluate your monitoring program to ensure that it is still providing the information you need. Remember that if you change any aspect of your monitoring program, you will need to update your QAPP and SOP documents and submit them to your EPA regional office for approval.

i. Updating Monitoring Design

As your understanding of your tribe's water quality and the sophistication of your program increases, you may want to consider whether a probability-based monitoring design is applicable to your tribe (probability-based monitoring may not be necessary for many small tribes with few water bodies). This type of monitoring design relies on samples taken at a randomly selected sample of the target water bodies. The results of these samples are used to make statistical inferences about the distribution of values for the entire population of water bodies. Chapter 11 of EPA's Consolidated Assessment and Listing Methodology (CALM) (available online at http://www.epa.gov/owow/monitoring/calm/calm_ch11.pdf) contains more information on probability-based monitoring.

You may need to alter your monitoring design if your program priorities change. For example, if you were using probability-based monitoring to provide a broad overview of the water quality of water bodies on your reservation and in the process identified a water body with pollution problems that you want to study more closely, you may need to incorporate targeted monitoring into your design. In addition, you may want to consider including effectiveness monitoring in your design. Effectiveness monitoring helps you collect water quality information to see if your projects resulted in improved water quality. Effectiveness monitoring will help you understand how well your efforts worked, whether you should continue implementing them, whether you should redesign them to work better, or whether you should try other measures.

Even if your program goals have not changed, you should review your monitoring design to make sure that it allows you to collect the data you need. For example, if you are using targeted or probability-based monitoring, evaluate your monitoring data to ensure that the monitoring locations you selected best represent water resources.

You also should begin to monitor for additional WQI to complement the priority indicators for which you already monitor. Additional parameters will help give you a more complete picture of water quality. They can include water-body-specific pollutants, ambient and sediment toxicity, health of organisms, and nutrients. Analyze your monitoring data and work with your EPA regional office, neighboring tribes, neighboring states, and appropriate federal agencies to help you identify any supplemental indicators for which you should monitor. Section I.1.b of this chapter provides more information on supplemental WQI. In some cases, you may also want to consider reducing or eliminating monitoring for some parameters at sites where your baseline data indicate that there is not a water pollution problem.

Only tribes with mature programs are required to report macroinvertebrate data to EPA. Depending on the needs of your program, however, you may want to begin collecting data on aquatic life earlier in program development. Biological assessment is an evaluation of the condition of a water body using biological surveys and other direct measurements of the resident biota in surface waters. In addition to helping you determine if the water body is supporting aquatic life, collecting biological data can help you:

- Characterize the existence and severity of impairment to the water resource
- Evaluate the effectiveness of control actions and restoration activities
- Support use attainability studies and cumulative impact assessments
- Characterize regional biotic attributes of reference conditions

Check EPA's *Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish, Second Edition* (Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling; EPA 841-B-99-002; 1999, available online at http://www.epa.gov/owow/monitoring/rbp/) for more information on bioassessments.

ii. Implementing Multiple Monitoring Designs

As your monitoring program matures, its sophistication should increase. You should be collecting more samples, but you probably will not measure the same parameters for every sample. Your monitoring objectives and monitoring designs may vary by water body or type of water body. To address this increased complexity, you can organize your monitoring designs by water body type (e.g., ground water, lake, river), by watershed, by timing (e.g., seasonal, year-round, special study), by issue of concern (e.g., NPS pollution, point dischargers, specific pollutants), or by any other categorization that makes sense for your tribe. Developing multiple monitoring designs will give you the flexibility to shape monitoring for different water bodies in the way best suited to the objectives related to each water body.

iii. Conducting Special Studies

In collecting and analyzing monitoring data for your waters, you may identify areas of particular concern or interest. You may want to monitor the effects of an activity (e.g., a new construction project) on a specific water body. Or you may find that your monitoring program does not fully address a new program need. In situations like these, you should consider conducting a special study. Special studies supplement your baseline monitoring program and will provide you with monitoring data to answer specific questions. To carry out a successful special study, you should follow the procedure outlined in EPA's *Guidance for the Data Quality Objectives Process* (EPA QA/G-4), available online at http://www.epa.gov/quality/qs-docs/g4-final.pdf.

2. Data Management

a. Updating and Upgrading Electronic Data Systems

Hardware (e.g., computers, monitors) and software (e.g., spreadsheet programs, database programs) manufacturers often develop new and improved products that, over time, may make your existing system obsolete. At some point, you may need to invest in new hardware and software products.

In addition, you should regularly check the Web sites or product centers of your hardware and software manufacturers to see if any upgrades are available. Many times, software manufacturers will issue product upgrades or modifications free of charge.

As the amount of data you store increases, you may find that the hardware and software tools no longer address all of your data management needs. If this is the case, consider upgrading to a more powerful computer with greater storage space or processing capacity or a more powerful software package. You may need to upgrade from a spreadsheet-based program to a database management system. When investing in new software, remember to consider how you will transfer your data from your existing system into your new software. Most database management systems allow you to import spreadsheets easily, but you should verify that your new software is compatible with your old software and make sure that you understand how to transfer your data.

b. Incorporating Additional Monitoring Parameters

When you expand your monitoring program, remember to modify your data management tools to account for those changes. If you begin to collect additional parameters, make sure that you update your data management procedures to include procedures for these parameters. Remember to adapt any other electronic tools you use (e.g., graphing tools, GIS tools) to reflect new data inputs.

c. Using STORET or Electronically Compatible Formats

EPA maintains a database that contains water quality information for the nation's waters. The database, known as STORET, contains data collected since 1999, along with older data that have been properly documented and migrated. STORET contains raw biological, chemical, and physical data on surface water and ground water collected by federal, state, and local agencies, tribes, volunteer groups, academics, and others. All states, territories, and jurisdictions of the United States are represented in these systems.

Each sampling result in STORET is accompanied by information on where the sample was taken (latitude, longitude, state, county, Hydrologic Unit Code, and a brief site identification), when the sample was gathered, the medium sampled (e.g., water, sediment, fish tissue), and the name of the organization that sponsored the monitoring. In addition, STORET contains information on why the data were gathered, sampling and analytical methods used, the laboratory that analyzed the samples, the personnel responsible for the data, and the quality control checks used when sampling and handling the samples.

You will be required to submit electronic reports of certain data elements discussed in this guidance to EPA in a STORET-compatible format. Because of the technical challenges associated with submitting data to STORET, at this time EPA will not require you to report data directly to STORET. More information on reporting requirements is provided in chapter 8. If you would like to submit your data directly to the STORET data warehouse, you or a contractor must operate STORET locally. The local STORET system is a data management system with data entry and reporting software modules that operate on personal computers. If you are interested in using STORET as your water quality data repository, EPA will provide you with the system free of charge. To receive a free copy of STORET, call 1-800-424-9067 or send an e-mail to STORET@epa.gov. For more information, visit the STORET Web site, http://www.epa.gov/storet/. EPA is working on improvements to the system that will eliminate the need to run a local copy of STORET to submit data to the STORET central warehouse.

d. Maintaining a Database with Graphing Capabilities

As the amount of data that you have collected increases, making sense of it will be facilitated by electronic capabilities such as graphing. Graphs are useful tools to identify environmentally sensitive areas, produce historical water quality trends analyses, and create spatial and temporal representations of your water quality data. Some of the products you use to store your data may have graphing tools. A number of GIS tools that can create graphs are available.

3. Data Assessment and Analysis

a. Evaluating Monitoring Program Effectiveness

As noted in section I.14 of chapter 3, program evaluations are important to advancing program goals and objectives. As you begin to accumulate monitoring data, remember to evaluate whether your monitoring data are allowing you to meet your program goals. If you are not collecting the right data to achieve your goals and objectives, identify what additional information you will need to meet your monitoring goals and consider adjusting your monitoring program accordingly.

b. Measuring Water Quality Improvement

As you begin to implement mitigation or prevention programs to improve or protect water quality, your monitoring program should allow you to evaluate the results of your protection and restoration activities. For example, your monitoring results should enable you to determine WQS attainment for specific water bodies if you have developed WQS. Use your monitoring program not only as an informational tool to help you learn about the condition of your water resources, but also as a diagnostic tool to evaluate the outcomes of your protection and restoration activities.

III. Mature Program Activities

1. Understanding and Using EPA's "*Elements*" Guidance

At this point in your program development, your monitoring program should incorporate all of the elements described in EPA's *Elements of a State Water Monitoring and Assessment Program*. You should have many of these elements in place in your program already, but you may need to develop some elements to meet EPA requirements. The following are the 10 elements you should include in your monitoring and assessment program:

1. **Monitoring Program Strategy**: You should have a comprehensive monitoring program strategy that meets your water quality needs and addresses all tribal waters, including streams, rivers, lakes, Great Lakes, reservoirs, estuaries, coastal areas, wetlands, and ground water, as applicable.

2. **Monitoring Objectives**: You should identify monitoring objectives that are critical to the design of a monitoring program that is efficient and effective at generating data that serve your decision needs.

3. **Monitoring Design**: You should use an approach and rationale for selecting monitoring designs and sample sites that best serve your monitoring objectives.

4. **Core and Supplemental WQI**: You should use a tiered approach to monitoring that includes core indicators selected to represent each applicable designated use, plus supplemental indicators selected according to site-specific or project-specific criteria.

5. **Quality Assurance**: Your quality management plans and QAPPs should be established and maintained, and should be approved by your EPA regional office and peer reviewed according to EPA policy to make sure that your monitoring and laboratory activities are scientifically valid and that you are meeting all reporting requirements.

6. **Data Management**: You should use an accessible electronic data system for water quality, habitat, and biological data, enter data in a timely manner, and provide public access to your data.

7. **Data Analysis and Assessment**: You should have a methodology for assessing attainment of your water quality goals for all water body types and all tribal waters based on analysis of various types of data (e.g., chemical, biological, land use) from various sources. To the extent possible, your program should include graphing spatial and temporal trends as a means of tracking water quality changes and identifying trends over time.

8. **Reporting**: You should produce timely and complete water quality reports and lists called for under CWA Sections 303(d), 314, and 319 as applicable to your program responsibilities.

9. **Programmatic Evaluation**: In consultation with your EPA regional office, you should conduct periodic reviews of each aspect of your monitoring program to determine how well it serves your needs for all tribal waters and all water body types.

10. **General Support and Infrastructure Planning**: You should identify current and future resource needs to fully implement your monitoring program strategy.

Refer to *Elements of a State Water Monitoring and Assessment Program* for more detailed information on these elements of a mature water quality monitoring program.

Water quality monitoring. Photo courtesy of Gila River Indian Community.

Chapter 5: Nonregulatory Approach

Introduction

This chapter contains information on addressing water quality problems on a watershed basis through nonregulatory means, including watershed-based planning, nonpoint source (NPS) assessment reports and management programs, source water assessment and protection, and other voluntary programs. The information

Activities Included in Chapter 5

Fundamental Program Activities	
1. Understanding Watershed-based Planning	
2. Understanding NPS Pollution	
3. Understanding Decentralized Wastewater Treatment Facilities	
4. Understanding Source Water Protection	
5. Choosing and Setting Water Quality Goals	
6. Determining Areas with Water Quality Problems	
7. Choosing and Setting Watershed-based Goals	
8. Developing Projects to Meet Water Quality Goals	
9. Conducting Public Outreach and Encouraging Public Involvement	
Intermediate Program Activities	
Tribes should begin these activities after having completed the relevant fundamental program activities.	
1. Understanding Section 319 Grants	
2. Section 319 Eligibility.....	*Qualifying for TAS Eligibility for the Section 319 Program*
	Developing Section 319 NPS Assessment Reports
	Developing Section 319 NPS Management Programs
3. Developing a Watershed-based Plan	
4. Conducting a Source Water Assessment	
5. Implementing Water Quality Protection and Restoration Activities	
6. Implementing Section 106 Grant Activities Related to Decentralized Systems	
7. Analyzing Water Quality Data and Defining Performance Measures	
Mature Program Activities	
Tribes should begin these activities after having completed the relevant fundamental and intermediate program activities.	
1. Evaluating Restoration Activities	
2. Providing Updated Information to Your Partners and Community	
3. Refining Your Assessment Report, Management Program, Source Water Assessment, and Watershed-based Plan	
4. Coordinating and Cooperating with Other Programs	
5. Working in Partnership with Other Tribes and States	
6. Other Voluntary Programs	

presented in this chapter is relevant for all tribes. Tribes that are developing regulation-based federally approved water quality controls or using tribal law to protect water quality could also benefit from applying the nonregulatory approaches described in this chapter.

EPA has developed this approach in recognition of the fact that some tribes may lack the technical and financial resources to implement a regulatory program. In some cases, nonregulatory approaches may address water quality problems, including NPS pollution, more effectively.

This approach uses nonregulatory water quality goals and objectives to measure program results. These goals may relate to the biology, chemistry, or habitat of the ecosystem and should focus on identifying the cause of the impact and possible ways of addressing the impact. See section I.1.a of chapter 4 for more information on goals and objectives.

The tools described in this chapter can include the development of regulatory components, such as zoning ordinances or land use regulations, or coordination with a neighboring tribe or state in support of their regulatory program. The intent of this chapter, however, is to highlight nonregulatory solutions for water quality problems. Regulatory components will not be discussed in depth.

Many watershed-based activities to control water pollution require "on-the-ground" restoration or construction activities that are not allowable activities under Section 106 grants. The discussion in this chapter is limited to activities that can be implemented using Section 106 funds, but provides links to other grant programs that fund restoration or construction activities (e.g., CWA Section 319 grants).

I. Fundamental Program Activities

1. Understanding Watershed-based Planning

A watershed is a geographic area in which all of the falling water drains to a common water body. Watersheds may be as small as a few acres or extend over thousands of square miles. Reservations often cover only part of a watershed. A watershed can cross tribal and state boundaries and fall under the jurisdiction of tribal, state, and local governments. It has been demonstrated that water quality improvements have been achieved when all the communities in a watershed work together.

Watershed-based planning is a "place-based" method for maintaining, protecting, or restoring resources within a watershed that relies on collaboration among interested stakeholders. Working together with a diverse array of partners can help tribes identify and implement successful strategies to protect their waters.

Watershed planning generally follows the steps listed below:

Step 1: Build partnerships

Step 2: Characterize the watershed

Step 3: Finalize goals and identify solutions

Step 4: Design an implementation program and assemble a watershed plan

Step 5: Implement a watershed plan

Step 6: Measure progress and make adjustments

EPA's Watershed Planning Handbook

EPA's Office of Water has published a guide to watershed management to help various organizations develop and implement watershed plans. *The Handbook for Developing Watershed Plans to Restore and Protect Our Waters* is aimed toward communities, watershed groups, and tribal, local, state, and federal environmental agencies.

The handbook is designed to supplement existing watershed planning guides that have been developed by agencies, universities, and other nonprofit organizations by taking users through each step of the watershed planning process (including monitoring and assessment, community outreach, selection and application of available models, best management practices, effective databases, implementation, feedback, and plan adjustment). The handbook is more specific than other guides about quantifying existing pollutant loads, developing estimates of the load reductions required to meet WQS, developing effective management measures, and tracking progress once the plan is implemented.

Available online at http://www.epa.gov/owow/nps/watershed_handbook, copies can also be ordered from the National Service Center for Environmental Publications. Call 1-800-490-9181 or email ncepimal@one.net. When ordering, please refer to EPA document number 841-B-05-005.

Working with neighboring states and tribes on improving water quality on a watershed basis will allow you to address problems on your reservation that originate from activities outside of the reservation and so improve the health of your watershed. Some states, tribes, or local governments may have watershed-based plans that you can help to implement or adapt. In some cases, you may want to enter into agreements with state and local governments, other agencies, or other tribes.

EPA encourages the development of watershed-based plans to protect pristine waters and restore impacted waters in accordance with the requirements of the Section 319 program. Watershed-based plans provide a coordinating framework for solving water quality problems by providing a specific geographic focus, integrating partnerships, science, and data, and coordinating priority setting and integrated solutions. The watershed-based plan should address a large enough geographic area so that its implementation will address all of the sources and causes of impacts and threats to the water body in question. Where feasible, the plan should be designed to meet WQS. Tribes should refer to EPA's *Guidelines for Awarding Section 319 Grants to Indian Tribes*, published each year in the Federal Register, for specific guidance in developing watershed-based plans (the guidelines will be made available each year on www.epa.gov/owow/nps/tribal.html when they are published). Section 106 grants can be used to develop watershed-based plans; however, tribes using 106 funds for this purpose should ensure that watershed-based plans meet programmatic requirements of the Section 319 program as described in the annual *Guidelines for Awarding Section 319 Grants to Indian Tribes*. Watershed-based plans cannot be implemented using Section 106 funds.

EPA's Office of Wetlands, Oceans, and Watersheds (OWOW) maintains a Web site with information about watersheds at http://www.epa.gov/owow/watershed/. OWOW has also developed a manual called the *Community-based Watershed Management Handbook*, available online at http://www.epa.gov/owow/estuaries/nepprimer/handbook.htm. EPA's Watershed Academy has developed a comprehensive Watershed Analysis and Management (WAM) Methodology for tribes, available online at http://www.epa.gov/owow/watershed/wacademy/wam/. The Center for Watershed Protection also provides many tools and guidance materials on their Web site, http://www.cwp.org. In addition, the Michigan Department of Environmental Quality has written *Developing a Watershed Management Plan for Water Quality: An Introductory Guide*, available online at http://www.deq.state.mi.us/documents/deq-swq-nps-Watershe.pdf. These resources can help you develop an effective watershed-based plan.

The Houlton Band of Maliseet Indians

The Houlton Band of Maliseet Indians (HBMI) is located in Aroostook County, Maine, on over 800 acres of reservation/trust land purchased in the late 1980s along the lower end of the Meduxnekeag River. This section of the river, downstream from a large portion of the watershed (and thus subject to upstream dischargers), can become choked with large mats of filamentous algae during the summer and turns brown with sediment after rainfall.

In 1992, the Band began developing a water resources program with Bureau of Indian Affairs (BIA) Water Resources Management, Planning, and Redevelopment funds to assess water quality impairments in the Meduxnekeag. By 1994, they were monitoring water quality for pH, dissolved oxygen, temperature, turbidity and conductivity. In 1995, funding from the Administration for Native Americans (ANA) Environmental Regulatory Enhancement program supported laboratory infrastructure and staff training to add alkalinity, *e. coli*, total suspended solids, benthic macroinvertebrates, and periphytic algae monitoring to their program. In 1995, the Band assisted the Maine Department of Environmental Protection's (MDEP) data collection efforts in support of its Waste Load Allocation study for the River's two dischargers. Currently, MDEP relies on the Band's water quality data to set some discharge permit limits for two upstream dischargers.

For the HBMI, developing a comprehensive, well-established, and reliable baseline monitoring program has paved the way for their water resources program to conduct special studies in partnership with other entities. Special studies are providing the information necessary to understand specific problems of the Meduxnekeag River ecosystem, notably the multiple-point and non-point causes of massive algal blooms. Ongoing study partners include the George Mitchell Center for Environmental and Watershed Research, University of Maine, and the USGS.

The HBMI is involved in extensive nonregulatory efforts to improve water quality in the Meduxnekeag. They collect data to better understand the extent and underlying causes of water quality impairment and share this data with MDEP for use in regulatory efforts to address non-attainment in the Meduxnekeag. As part of an effort to ensure tribal activities do not impair water quality, they have begun developing tribal water quality standards that incorporate the Band's cultural values and uses of water. This is coupled with an effort to develop culturally appropriate EPA-approved water quality standards to be enforced by EPA.

2. Understanding NPS Pollution

NPS pollution threatens water quality in many watersheds. Unlike point sources of pollution, which generally are stationary, fixed facilities (e.g., wastewater treatment plants, industrial facilities) from which pollutants are discharged via a conveyance, NPS pollution generally is unconfined rainfall and snowmelt runoff from farms, lawns, landfills, streets, parking lots, and driveways that picks up natural pollutants such as sediment and topsoil and man-made pollutants such as pesticides, fertilizers, hazardous wastes, heavy metals, oil, and other automotive fluids. The rainfall and snowmelt may then flow into surface water or ground water, carrying these pollutants.

A number of factors contribute to NPS pollution. Some of the leading contributors to NPS pollution are:

- Agricultural activities including grazing, plowing, pesticide spraying, irrigation, fertilization, planting, and harvesting. Major NPS pollutants from these activities include pesticides, sediments, and excessive nutrients, which can occur through applications of crop fertilizers and manure from animal production facilities.

- Urban development including road, bridge, building, and parking lot construction. Development can result in increased flows that cause stream erosion and can carry large amounts of runoff with a variety of pollutants including sediment from new development, oil and grease from vehicles, and nutrients and pesticides from turf management and gardening. Failing septic systems also carry pathogenic bacteria and viruses from inadequately treated sewage.

- Hydromodification, or alteration of the hydrologic characteristics of coastal and noncoastal waters, can cause degradation of water resources. Hydromodification includes activities such as channelization, dredging, and construction of dams not covered under existing federal regulations. Excess sediment due to erosion can alter aquatic communities and carry other harmful pollutants into water bodies.

- Habitat modification, including the removal of vegetation along streambanks and buffers that help filter runoff and provide shade to the adjacent water body. These modifications can result in an increase in water temperature and an increase in the quantity and velocity of runoff, making the river or stream less suitable for the organisms inhabiting it.

EPA has placed a high priority on controlling NPS pollution. Because of the difficulty of tracing NPS pollution to a single source, Congress enacted Section 319 of the CWA, authorizing EPA to award grants to eligible states and tribes for the purpose of assisting them in implementing approved NPS management programs developed pursuant to Section 319(b). The principal goal of the NPS management control program is to control NPS pollution through implementation of management measures and practices to reduce pollutant loadings resulting from NPS pollution identified in the tribe's assessment report developed pursuant to Section 319(a). Management measures are actions that your tribal environmental program, your community, or specific sectors of your community (e.g., farmers, builders) can take to minimize the impacts of NPS-pollution-generating activities—for example, restoring streambanks to prevent erosion and reduce sediment runoff or protecting wetlands to increase natural filtration of contaminants. Tribes can implement measures through a variety of programs, including nonregulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects. EPA encourages the development and implementation of watershed-based plans to guide implementation of management measures to achieve pollutant reductions from NPS. Remember that construction activities cannot be completed using Section 106 grants.

NPS and Water Quality Impairment

In its 2000 National Water Quality Inventory report (available online at http://www.epa.gov/305b/2000report/), EPA identified NPS pollution as the leading source of water quality impairment.

Because of the diffuse nature of NPS pollution, you will need to work with partners to implement effective NPS pollution control programs. Partners can include other tribal departments (e.g., fish and wildlife), neighboring states, local governments, EPA regional offices, other federal entities, and, perhaps most important, members of your community. NPS programs often rely on the voluntary implementation of management measures by all partners for success. Although collaboration with other entities is important in all areas of water quality protection, it is essential to control NPS pollution.

Allowable NPS Control Activities

NPS management measures requiring construction are implemented under Section 319 of the CWA and are thus ineligible for Section 106 funding. Section 106 funding can be used to develop NPS assessment reports and management programs, which are required elements when applying for Section 319 program authorization. Section 106 grants can also be used to develop watershed-based plans.

3. Understanding Decentralized Wastewater Treatment Facilities

Decentralized wastewater treatment systems (commonly called septic systems) are a significant component of the United States' wastewater infrastructure. They derive their name from their location — they treat wastewater close to the source, typically on the property of individual homes and businesses. Unlike centralized urban wastewater treatment systems that pipe large amounts of wastewater many miles through sewers prior to reaching the treatment facility, decentralized wastewater treatment systems usually use small pipes for collecting small volumes of domestic wastewater. Decentralized systems (especially smaller ones) usually disperse treated waste under the ground surface, where the soil provides further treatment. Some decentralized systems are designed to discharge to surface waters following treatment.

The performance of decentralized wastewater treatment systems is a national issue of great concern to EPA. These systems are used in 25 percent of the homes in the United States and 33 percent of new development, and they are permanent components of our nation's wastewater infrastructure. Decentralized systems can be an effective option for protecting public health and the environment if properly designed, installed, and managed. Proper management of decentralized systems involves: implementation of a comprehensive, life-cycle series of elements and activities that address public education and participation; planning; performance; site evaluation, design, construction, operation and maintenance; residuals management; training and certification or licensing; inspections and monitoring; recordkeeping, inventorying, and reporting; and financial assistance and funding.

Decentralized systems can be a significant threat to public health and water quality when they are not properly sited, designed, installed, operated, and maintained. "Failure" of onsite systems is a term subject to much debate; however, 1995 U.S. Census data show that over 10 percent of all systems back up into homes or have wastewater emerging on the ground surface, and that more than half the systems in the United States were installed more than 30 years ago, when onsite rules were nonexistent or poorly enforced. Few systems receive proper maintenance because homeowners are either unaware of the need for maintenance or find it a distasteful task. In addition, most regulatory programs do not require homeowner accountability for system performance after installation.

Although it is difficult to measure and document specific cause-and-effect relationships between onsite wastewater treatment systems and the quality of our water resources, it is widely accepted that improperly managed systems contribute to water quality problems. EPA's National Water Quality Inventory 1996 Report to Congress states that "improperly constructed and poorly maintained septic systems are believed to cause substantial and widespread nutrient and microbial contamination to ground water." In United States-classified shellfish growing areas, closures and harvest restrictions have occurred primarily because of the concentration of fecal coliform bacteria associated with human sewage and with organic wastes from livestock and wildlife. Onsite wastewater systems also may contribute to an overabundance of nutrients in ponds, lakes, and coastal estuaries, leading to an overgrowth of algae and other nuisance aquatic plants. EPA is also concerned with the presence of nitrates in ground water, particularly in rural areas where residents must rely on individual wells and onsite systems to serve relatively small lots. It is essential to improve the performance of decentralized wastewater systems through better management to improve the quality of our nation's waters.

Most water quality programs have a role, either direct or indirect, in managing or working with decentralized systems. Regardless of your program's current involvement with decentralized wastewater treatment systems, effective watershed-based planning requires that you take these systems into account. Poorly managed or operated decentralized systems can significantly affect water quality on your reservation. Appropriate management programs for decentralized systems will support the activities and approaches being used in other EPA programs, such as watershed management, NPDES, TMDLs, WQS, source water assessment and protection, and NPS control, and contribute to achievement of water quality and public health goals. For more information on decentralized systems, visit EPA's new National Management Measures to Control Nonpoint Source Pollution from Urban Areas Web site, http://www.epa.gov/owow/nps/urbanmm/index.html.

4. Understanding Source Water Protection

Source water is the water from reservoirs, streams, rivers, or underground aquifers that drinking water systems use to supply drinking water. Source water protection involves identifying any significant potential source water contaminants, taking steps to maintain the quality of source water and preventing contamination from occurring (i.e., contingency planning), and determining whether the best available water source is being used. As a key step in protecting source water, your tribe might want to conduct a source water assessment. A source water assessment provides the basic information needed to protect drinking water sources and is a foundation for ensuring the safety of your drinking water. See section II.4 of this chapter for more information on conducting source water assessments.

EPA is committed to helping tribes assess the rivers, lakes, springs, and aquifers serving as tribal public water supplies and implement preventative measures against contamination of these water resources. See EPA's Tribal Source Water Web site (http://www.epa.gov/safewater/protect/tribe.html) for additional resources on source water protection.

5. Choosing and Setting Water Quality Goals

If you have developed WQS, your water quality goal should be to enable all water bodies to meet their designated uses. If an NPS TMDL has been established for an impaired water body, then the water quality goal should be at a minimum to achieve the NPS TMDL. If you have not developed WQS, or if a TMDL has not been established for an impaired water body, you can establish quantifiable water quality-based goals, such as reducing the levels of a specific pollutant by a certain percentage or amount. You can also use standards from neighboring states or tribes as a proxy to measure water body impairment. Alternatively, you could use some basic parameters, such as sediment, nitrogen, phosphorus, nutrients, total suspended solids (TSS), and dissolved oxygen. For an example of using basic parameters to establish water quality goals, refer to the Gila River Indian Community case study presented in section I.1.b of chapter 4. The case study shows how the Gila River Indian Community uses water quality indicators (WQI) to measure water quality improvement. Although EPA encourages you to use numeric standards or proxies, in some cases, narrative goals (e.g., remove exotic or invasive species, eliminate nuisance algae blooms) may better reflect the goals for a water body.

6. Determining Areas with Water Quality Problems

After you have set water quality goals, you should evaluate your monitoring data to identify water bodies that are not meeting those goals. As noted in section I.4 of chapter 3, you can also use data from other sources if you do not have all the monitoring data you need.

Depending on the expertise and resources available to your program, you may find it helpful to focus on one watershed or a subset of watersheds each year. You may find that different water bodies differ in topography, degree of surrounding urbanization, or land use, and some water bodies are more susceptible to pollution. If any of your water bodies face a severe pollution threat, you may want to evaluate monitoring data from these waters first. If your source water assessment shows that any of your ground water sources are likely to be contaminated or are vulnerable to contamination, then you may want to prioritize monitoring and protection of wellhead areas.

Once you have identified areas with water quality problems, you should prioritize these areas. Although you should consider current conditions when prioritizing problems, the most severe problems may not necessarily be the problems you want to address first. For instance, a high-quality water resource may be in good condition but threatened by NPS pollution. You may want to address this problem first; preventing pollution is often more cost-effective than restoring an impaired water body. In addition, consider cultural significance, biological and ecological factors, partner buy-in on the project, the cost and feasibility of possible solutions, and tribal members' concerns when prioritizing water quality problems.

Note than an NPS assessment report, developed in accordance with the Section 319 program, provides a good framework for determining areas with water quality problems. A source water assessment also can provide you with information on protecting water quality. Both of these tools are discussed in section II of this chapter.

There are a number of other partners that you can work with to implement nonregulatory activities. Your EPA regional office, the USDA NRCS program, the USGS, and other government agencies may be implementing NPS activities in your area. In addition, local universities or community colleges may be able to assist you in developing management measures and implementing NPS pollution control programs. Talk to your EPA regional office to identify any NPS pollution control programs in your area.

Rotating Basins Approach

To maximize resources and at the same time address problems in different basins, many organizations have adopted a rotating basins approach to watershed planning. In this approach, watersheds are grouped into units of sub watersheds. A five-step watershed management process is followed to focus activities within each basin, while staggering the overall workload. Specifically, the assessment, planning, and management activities are grouped under five general categories:

- Data collection/monitoring
- Assessment/prioritization
- Strategy development
- Basin plan review/approval
- Implementation

Implementation of the rotating basins approach involves beginning the five-step management cycle in one basin the first year (data collection/monitoring). In the second year, step two (assessment/prioritization) occurs in that basin, while in another basin step one activities (data collection/monitoring) are undertaken. Moving sequentially through the five management steps in each basin focuses resources associated with that activity rather than scattering them.

7. Choosing and Setting Watershed-based Goals

Your watershed-based goals should relate to your water quality goals and ultimately help you achieve them. Watershed-based goals can address current and historical distribution and condition of important resources in a watershed, or the physical and ecological setting of the watershed. Some common watershed plan goals that can be funded with Section 106 grants include:

- Characterize water quality
- Evaluate the impacts of forestry, agriculture, urbanization, septic systems, or construction and effects of land use on pollution
- Protect natural resources
- Develop watershed-based plans
- Identify causes of streambank erosion
- Investigate causes of declines in ground water quantity
- Characterize stormwater runoff
- Conduct community education and outreach about the watershed
- Develop watershed maps showing water body types, tribal cultural sites, species distribution, and sites of water quality impairment
- Develop local and community watershed organizations
- Inventory possible restoration sites
- Determine causes of floods

8. Developing Projects to Meet Water Quality Goals

An initial assessment of your water pollution issues can help you identify appropriate goals to address them. For example, NPS problems are typically addressed through management measures. As noted above, NPS management measures are practices, techniques, principles, or activities that have been shown to help reduce NPS in the most effective and practical ways. The goal of these management measures is to reduce NPS pollution by keeping pollutants out of the water rather than removing them once they are in the water. Management measures can be sector specific (e.g., agriculture, timber, construction, stormwater, marinas, septic systems) or cover broader activities that address all sources of NPS pollution (e.g., planting vegetative buffers around your water bodies, maintaining your streambanks).

EPA, states, and many other organizations have developed documents with information on controlling NPS pollution through management measures. Your EPA regional office can provide you with information on management measures that have successfully addressed NPS issues similar to the ones you face. In addition, OWOW maintains a comprehensive list of EPA and non-EPA documents on NPS pollution and management measures at http://www.epa.gov/owow/nps/pubs.html. EPA's Office of Ground Water and Drinking Water (OGWDW) offers electronic training on protecting source water at http://epa.gov/safewater/dwa/electronic/ematerials.html#SWP. EPA's Office of Wastewater Management (OWM) offers information and guidance on implementing management programs for septic systems at http://cfpub.epa.gov/owm/septic/home.cfm.

Many solutions to water quality problems will require you to work with partners to implement them successfully. A watershed-based plan can provide the coordinating framework for identifying your partners and prioritizing the management measures you want to implement. Sections I.9, III.4, and III.5 of this chapter contain more information on building networks.

9. Conducting Public Outreach and Encouraging Public Involvement

Water quality protection programs will require active public participation to succeed. A successful tribal water quality program, particularly one that involves voluntary activities, depends on community involvement and participation. In addition, informed and involved members of the community are more likely to support your program's efforts to protect the environment. For example, if you want to address leaching from septic systems, you will have to work closely with homeowners and small businesses that use septic systems. Sections I.12, II.5, and III.3 of chapter 3 contain some general information on encouraging public participation and involvement.

Bishop Paiute Tribe Analytical Lab. Photo courtesy of Bishop Paiute Tribe.

Depending on the activities you choose to implement, you will need to target different groups of your population. For example, if you want to implement a pesticide and fertilization management program, you will have to work with farmers in your community.

In addition, because of the characteristics of NPS pollution, watershed-based planning, and source water protection, community awareness and involvement are especially important in these areas. Consider carrying out public education programs to raise awareness on issues such as the proper disposal of car fluids. The box below provides some information on basic activities members of your community can take to reduce NPS pollution. Some methods that communities have used to raise public awareness about all water quality issues include:

- Tours of restored or impaired water bodies
- Educational workshops on NPS pollution, source water protection, and septic system management
- Events and programs such as "adopt-a-river," river cleanup days, and volunteer monitoring networks
- Brochures, flyers, and newsletters on NPS pollution, source water protection, and septic system management
- No-penalty hazardous waste collection programs
- Solicitation of public input in developing a septic system management program

EPA has developed a comprehensive guide for conducting watershed outreach campaigns that includes specific information about understanding the audiences in your watershed, creating messages that resonate with them, finding appropriate ways to communicate your message, and understanding how outreach can help change behavior (see *Getting in Step: A Guide for Conducting Watershed Outreach Campaigns*, available online at

www.epa.gov/owow/watershed/outreach/documents/getnstep.pdf). EPA is also in the process of releasing a new NPS Outreach Digital Toolbox, which will include sample materials and templates of successful outreach materials (e.g., public service announcements) from across the country that you can customize to meet your own outreach needs (see www.epa.gov/owow/nps/toolbox.html).

Colorado River Indian Tribes Youth Day. Photograph Courtesy of the Colorado River Indian Tribe.

NPS and Public Outreach

The Red Lake Band of Chippewa Indians, located in EPA Region 5, has developed a project called "NPS/ Stormwater Management Planning and NPS Reduction/Buffer Zone Education." As part of this project, they worked with the Natural Resources Conservation Service (NRCS) to produce a folder of informational pamphlets and resources to be mailed to watershed residents in an effort to raise awareness about stormwater and NPS pollution issues. Other sponsors of the project included the University of Minnesota Extension Service, the Beltrami County Soil and Water Conservation District, and USDA's Farm Service Agency.

The resource packet offers residents the opportunity to contribute to regional NPS management by evaluating their own households and properties. In addition to providing an overview of NPS pollution, each folder contains several pamphlets on topics such as septic system maintenance, reducing the use of hazardous household products, and agricultural practices. The folder also lists the names and Web sites of numerous organizations that can offer more information and technical support.

In addition to the mailing, the Band hosts an after school River Watch Program that helps get students involved in river conservation and an annual Water Festival that provides a variety of educational opportunities for 5th grade students. During the Water Festival, students participate in fun-filled activities while developing awareness for the protection of the Band's valuable water resources.

Examples of Management Measures for Your Community

The management measures listed below are simple actions that members of your community can take to help reduce NPS pollution. You may want to expand on this list and distribute it to members of your community to raise their awareness of NPS issues or develop programs to support related NPS prevention activities.

- Properly dispose of pet waste and other animal waste to help prevent runoff of nutrients and pathogens into your water bodies.
- Report septic system leaks to the proper tribal authority for repair.
- NEVER dump automotive fluids down a drain, or on the ground. Recycle used auto fluids at your local recycling facility; see EPA's Web site for information on recycling waste: http://www.epa.gov/epaoswer/osw/index.htm.
- NEVER dump household hazardous wastes (HHWs) down a drain, or on the ground. Dispose of HHWs (e.g., cleaners, pesticides, paint) at the proper disposal facility; for more information on HHWs, see EPA's Web site at http://www.epa.gov/epaoswer/non-hw/muncpl/hhw.htm.
- Educate yourself on the proper use and application of pesticides. Information is available online at http://www.epa.gov/pesticides/.
- Fence off streams and wetlands from livestock and provide alternate water sources. Livestock in streams and wetlands affect plant life and cause soil erosion.
- Rotate grazing on lands to prevent overgrazing and stabilize soil.
- Use ground cover, such as jute netting or ground cover plants, on bare ground to prevent soil erosion.
- Plan or participate in community cleanup programs or events.
- Promote and provide environmental education and NPS pollution awareness in your community.

II. Intermediate Program Activities

1. Understanding Section 319 Grants

This section discusses nonregulatory components of the 319 program, which supports both regulatory and nonregulatory activities. As noted in section II.1 of chapter 3, Section 319 grants can be used to implement NPS activities. Each year, EPA awards Section 319 grants to eligible tribes either as base funding or competitive funding. Base funding is issued on a non-competitive basis at $30,000 or $50,000 (depending on land area) to implement the full range of activities in a tribe's approved NPS management program. The remaining funds are awarded on a competitive basis for the purpose of developing and implementing watershed-based plans and implementing on-the-ground water quality improvement projects that are expected to achieve actual water quality benefits in waters impacted by NPS pollution. Tribes are encouraged to submit on-the-ground projects that implement watershed-based plans. In FY 2005, EPA awarded $7 million to 84 tribes, with approximately $2.8 million awarded to 84 tribes as base funding and $4.2 million awarded to 31 tribes on a competitive basis. Tribes should refer to the annual guidelines on awarding Section 319 grants for more information about the process for awarding Section 319 funding, including the criteria for proposed work plans (see http://www.epa.gov/owow/nps/tribal.html).

You can use Section 106 grants to fund some NPS control activities, including the development of NPS assessments and management programs, as well as the development of watershed-based plans for implementing NPS projects and management measures. Section 106 grants may also be used for additional NPS activities, such as inventorying NPS, attending NPS meetings and trainings, and forming partnerships to address NPS issues. Construction activities and remediation activities are generally prohibited under Section 106 grants. Contact your EPA grant project officer for more information on specific projects that are authorized for funding under Section 106. Section I.3.b of chapter 3 contains more information on projects that can be funded under a Section 106 grant.

2. Section 319 Eligibility

To be eligible for Section 319 grants, tribes must have (a) TAS eligibility in accordance with CWA Section 518; (b) an approved NPS assessment report in accordance with CWA Section 319(a); and (c) an approved NPS management program in accordance with CWA Section 319(b). Section 319 grants cannot be used to develop NPS assessment reports or management programs (but can be used to update approved NPS management programs). Section 106 funds can be used for these purposes. You should consider applying for Section 319 grants, especially if you want to implement NPS control activities not allowed under the conditions of your Section 106 grant.

Tribes should work with the EPA grant project officers and refer to EPA's *Tribal Nonpoint Source Planning Handbook* (EPA 841-B-97-004) for information on applying for Section 319 grants. The Handbook is available for order through EPA's Office of Water Publications Web site (http://yosemite.epa.gov/water/owrccatalog.nsf/).

In some cases, state NPS funds may be available to tribes through state pass-throughs. Consult your EPA regional office to see if this option is available in your region.

a. Qualifying for TAS Eligibility for the Section 319 Program

You will need to qualify for TAS eligibility for the purposes of administering the Section 319 program to become eligible for Section 319 grants. If you have qualified for Section 106 TAS eligibility, you already may have met some of the requirements for Section 319 TAS eligibility (e.g., federal recognition and demonstration of substantial governmental duties). See section I.1 of chapter 3 and contact your EPA grant project officer for more information on these requirements.

b. Developing Section 319 NPS Assessment Reports

An NPS assessment report describes existing and potential NPS-related water quality problems in reservation waters using existing water quality data. The report identifies the nature, extent, effect, and causes of NPS pollution. It should also describe existing programs and methods used to control the pollution. The report must be approved by your EPA regional office.

NPS assessment reports should include four elements:

1. An identification of waters that cannot be expected to attain or maintain WQS without NPS pollution control. If you have not developed tribal WQS, you can use state standards as a proxy to identify impacted water bodies.

2. An identification of the sources of NPS pollution (e.g., agriculture, urban runoff, construction) that contribute to the water quality problems of the identified water bodies.

3. A description of how you will first identify management measures to control NPS pollution and how you will then use those management measures to control the pollution. Include public participation and intergovernmental coordination if applicable.

4. A description of any existing tribal, state, federal, and other programs you can use to help control NPS pollution.

See EPA's *Tribal Nonpoint Source Planning Handbook* for detailed information on developing an NPS assessment report.

As your NPS program evolves, you will learn more about NPS pollution and the most effective ways of controlling different types of pollution. As your program matures and as conditions change, you should continue to revise and update your assessment to account for this information.

c. Developing Section 319 NPS Management Programs

As set forth in Section 319(b)(1) of the CWA, an NPS management program describes how you intend to control pollution added from NPS to navigable waters within the reservation and improve the quality of such waters. If you cannot address all NPS categories, you can focus your management program on NPS pollution that you have identified as a priority. An NPS management program must have six elements:

1. A description of the management measures you will use to reduce pollutant loadings from each category of sources you identified in your NPS assessment report.

2. A description of the programs you will use to implement the management measures you have identified, including nonregulatory or regulatory (e.g., zoning laws) approaches, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects.

3. A schedule containing annual milestones for the implementation of management measures identified under element (1) and the programs identified under element (2).

4. A certification by legal counsel that your tribal laws provide authority to implement the programs identified under element (2) or a list of additional authorities your tribe will need to implement the management program. If you need to seek additional authorities, you should submit a schedule and commitment to seek those authorities as quickly as possible.

5. A list and description of additional sources of funding (federal or other) for the implementation of NPS pollution control measures.

6. A list of any assistance programs or development projects (e.g., USDA NRCS) that your tribe will review to determine their effects on water quality and consistency with your tribe's NPS program.

See EPA's *Tribal Nonpoint Source Planning Handbook* for detailed information on developing an NPS assessment report.

If you choose not to apply for Section 319 grants, you should still consider developing an NPS assessment report and management program. Completing these documents will give you important information to help you assess your NPS pollution control efforts and plan effectively for the future.

3. Developing a Watershed-based Plan

EPA encourages tribes to develop watershed-based plans to guide the implementation of their NPS programs. EPA's annual Guidelines for Awarding Section 319 Grants to Indian Tribes provide guidance in developing watershed-based plans, and encourage tribes to use competitive funding for projects that are designed to develop or implement a watershed-based plan (see http://www.epa.gov/owow/nps/tribal.html). The watershed-based plans incorporate specific elements designed to help tribes identify significant sources of NPS pollution, identify the management measures that will most effectively address those sources, and estimate the expected water quality-based goals that will be achieved. Without such information to provide focus and direction, it is less likely that a project that implements the watershed-based plan can address the sources of water quality impairments efficiently and effectively. Section 106 grants can be used to develop watershed-based plans; however, tribes using 106 funds for this purpose should ensure that watershed-based plans meet programmatic requirements of the Section 319 program as described in the annual *Guidelines for Awarding Section 319 Grants to Indian Tribes*.

The nine elements of a watershed-based plan are:

1. An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve the goal identified in element (3) below. Sources that need to be controlled should be identified at the significant subcategory level with estimates of the extent to which they are present in the watershed (e.g., X number of dairy cattle feedlots needing upgrading, including a rough estimate of the number of cattle per facility; Y acres of row crops needing improved nutrient management or sediment control; or Z linear miles of eroded streambank needing remediation).

2. A description of the NPS management measures that will need to be implemented to achieve a water quality-based goal described in element (3) below, as well as to achieve other watershed goals identified in the watershed-based plan, and an identification (using a map or a description) of the critical areas which those measures will be needed to implement the plan.

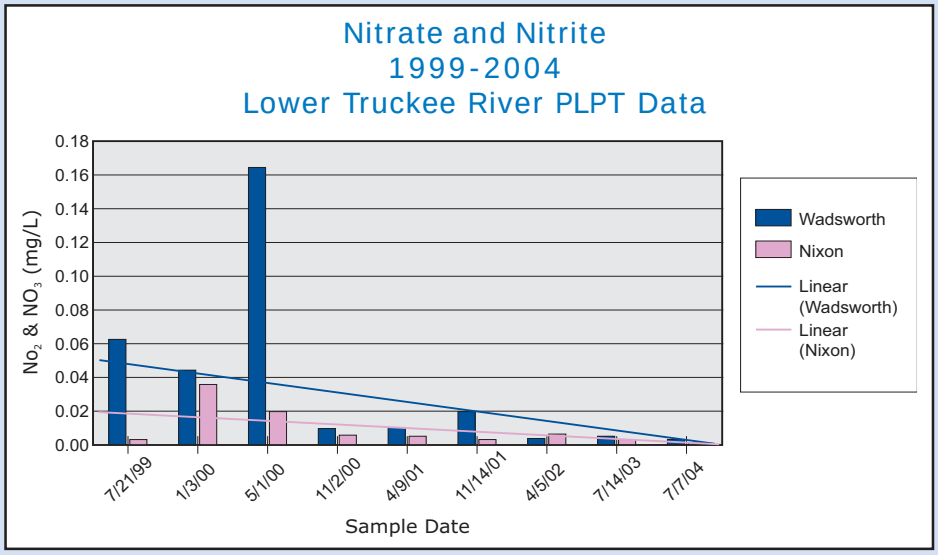
3. An estimate of the water quality-based goals expected to be achieved by implementing the measures described in element (2) above. To the extent possible, estimates should identify specific water quality-based goals, which may incorporate, for example, load reductions, water quality standards for one or more pollutant/use, NPS total maximum daily load (TMDL) allocations, measurable in-stream reductions in a pollutant, or improvements in a parameter that indicates stream health (e.g., increases in fish or macroinvertebrate counts). If information is not available to make specific estimates, water quality-based goals may include narrative descriptions and best professional judgment based on existing information.

PYRAMID LAKE PAIUTE TRIBE

The Pyramid Lake Paiute Indian Reservation is located in western Nevada, about 30 miles northeast of Reno, and encompasses about 474,000 acres. Pyramid Lake, a slightly saline terminal desert lake, is located entirely within the reservation. The lake covers approximately 114,000 acres and is the focal point of the reservation. The Lower Truckee River, which originates in the Sierra Nevada, flows through the reservation for 31 miles and terminates in Pyramid Lake. The beneficial uses of Pyramid Lake and Truckee River include provision of a cold freshwater habitat, protection of threatened or endangered species, preservation of indigenous aquatic life, and the protection of aquaculture. Other water resources at Pyramid Lake include ground water, streams, creeks, wetlands, springs, and seepages. The beneficial uses of groundwater and wetlands include cultural, indigenous aquatic life, livestock watering, and water quality enhancement. According to the tribe, it has depended upon Pyramid Lake and the Truckee River for food, clothing and shelter materials, as well as cultural and spiritual health since time immemorial.

In 1994, the tribe's NPS Assessment Report and Management Program was approved by EPA and the tribe became eligible for Section 319 funding. The tribe has been awarded multiple competitive NPS grants to carry out its NPS pollution control program to address pollutants found through its water quality monitoring program. Specifically, the NPS program mitigated and prevented the effects of uncontrolled grazing by cattle that led to turbidity from soil erosion, nutrient loads, loss of native vegetation, and destabilized streambanks. This was accomplished through the implementation of management measures such as fencing and providing alternate water sources.

From 1999 to 2004, water quality monitoring and sampling on the Lower Truckee River has shown that riparian habitat has improved as a direct result of the implementation of NPS on-the-ground projects including the fencing out of livestock and improved water flow management for cottonwood and willow trees. The environmental results of the NPS projects show reduction in velocity and sedimentation and increased bank stability in the Truckee River. Specifically, nitrate and nitrite levels have declined from 0.17 mg/L in May 2000 to about 0.01 mg/L in July 2004 (see attached chart). The riparian areas restored under the NPS grant program will continue to recover through the intensive management of cattle grazing, which will allow the water level to rise back to support native vegetation and become properly functioning systems.



Images courtesy of Pyramid Lake Paiute Tribe

4. An estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon to implement the plan. As sources of funding, tribes should consider other relevant federal, state, local, and private funds that may be available to assist in implementing the plan.

5. An information and education component that will be used to enhance public understanding and encourage early and continued participation in selecting, designing, and implementing the NPS management measures that will be implemented.

6. A schedule for implementing the NPS management measures identified in this plan that is reasonably expeditious.

7. A description of interim, measurable milestones for determining whether NPS management measures or other control actions are being implemented.

8. A set of criteria that can be used to determine whether the water quality-based goals are being achieved over time and substantial progress is being made towards attaining water quality-based goals and, if not, the criteria for determining whether the watershed-based plan needs to be revised.

9. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criterion established under element (8) above.

4. Conducting a Source Water Assessment

A source water assessment characterizes sources of drinking water (rivers, lakes, reservoirs, springs, and ground water wells) to identify significant potential sources of contamination and to determine how susceptible the sources are to these threats. The assessments provide the basic information needed to protect drinking water sources and a foundation for ensuring drinking water safety. Tribes might also choose to conduct a source water assessment to determine the quality of their water. The final product of a source water assessment is a report that provides basic information about a drinking water source.

These source water assessments should include the following three major elements:

- A delineation (or map) of the source water assessment area. This determines the boundaries of the area from which your source water is drawn, i.e., the area that you will need to protect.

- An inventory of all significant potential sources of contamination by regulated contaminants in the delineated area.

- A determination of how susceptible the water supply is to those contamination sources.

Source Water Assessments

For more information on Source Water Assessments, please visit EPA's Source Water Assessment Web site at http://www.epa.gov/safewater/protect/assessment.html or call the EPA Safe Drinking Water Hotline at 1-800-426-4791.

5. Implementing Water Quality Protection and Restoration Activities

Your NPS assessment report and management program, watershed-based plan, or source water assessment will provide you with a road map for your water quality protection and restoration activities. Begin to implement those activities, prioritizing them as needed. Involve members of your community and other tribal, federal, state, or local partners, as necessary. Remember that you may not be able to use Section 106 funds to implement all the management measures you have identified.

6. Implementing Section 106 Grant Activities Related to Decentralized Systems

If decentralized systems pose a threat to water quality on your reservation, you may be able to use Section 106 funds for a variety of activities related to improving the performance of decentralized systems (remember that Section 106 funds cannot be used for wastewater treatment facility construction or operation). Activities related to decentralized systems that can be funded through Section 106 grants include:

- Public outreach, education, and involvement programs
- Programs to promote stakeholder and partner agency involvement
- Development of effective management programs to ensure that performance requirements for decentralized systems are met
- Watershed and ground water assessments
- Establishment of public health and water resource protection goals related to decentralized systems
- Targeted surface and ground water monitoring
- Studies to characterize the impact of malfunctioning decentralized systems, discharging and non-discharging, on surface and ground water quality
- Inventory and assessment of decentralized systems
- Identification of critical areas where decentralized systems pose elevated risks (e.g., sites with poor soils, high water tables, high densities of existing systems, near sensitive surface waters, or in floodplains)

Contact your EPA regional office for more information on eligible activities related to decentralized wastewater treatment systems. EPA and other organizations provide construction funding through various grant programs:

EPA Programs

To help prevent decentralized system failure and improve management practices, EPA has issued *Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems* (EPA 832-B-03-001) and the *Handbook for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems* (EPA 832-D-03-001), available online at http://cfpub.epa.gov/owm/septic/home.cfm. These documents are designed to enhance the performance and reliability of decentralized wastewater treatment systems through improved management programs. Proper management of decentralized systems involves implementation of a comprehensive group of elements and activities, such as public education and participation, planning, operation and maintenance, and financial assistance and funding. The Management Guidelines will help improve system performance by encouraging the institutionalization of management concepts

and raising the quality of state, tribal, and local management programs. Improved management will minimize the occurrence of failures by ensuring (with proper planning, siting, design, installation, operation and maintenance, and monitoring) that pollutants are adequately treated and dispersed into the environment, thereby reducing risks to both public health and local water resources.

- The Alaskan Native Village and Rural Communities Sanitation Grant Program Provides grants to Alaska Native Villages and rural communities for drinking water and wastewater facility construction, and training and technical assistance in facility operation. Visit http://www.epa.gov/owm/mab/indian/anvrs.htm for more information.

- The Clean Water Indian Set-Aside Grant Program provides grants to Indian tribes and Alaskan Native Villages for the planning, design, and construction of wastewater treatment systems. More information on the Clean Water Indian Set-Aside Grant Program is available online at http://www.epa.gov/owm/mab/indian/cwisa.htm.

Section 319 funds also can be used for projects that implement management measures to address the proper siting, design, and installation of on-site wastewater treatment systems, upgrading of existing systems, inspections, assessments, development of local codes and ordinances, and education and training on proper management practices. Section 319 funds may be used to fund any urban storm water activities that are not specifically required by a draft or final National Pollutant Discharge Elimination System (NPDES) permit. See section III.5 of chapter 7 for more information on NPDES permits.

Other Organizations

- The Indian Health Service (IHS) — Sanitation Facilities Construction Program provides funding for drinking water, wastewater, and solid waste disposal facilities for American Indians. IHS also provides on-site training and technical assistance for the planning, design, construction, and operation and maintenance of facilities. The Division of Sanitation Facilities Construction's Web site (http://www.dsfc.ihs.gov/) contains more information on this program.

- USDA's Rural Utilities Service Water and Waste Disposal Program provides both loans and grants to rural communities and Indian tribes (with 10,000 or fewer persons) for drinking water and wastewater systems, and for solid waste and storm drainage products. More information is available through the program's Web site, http://www.usda.gov/rus/water/.

7. Analyzing Water Quality Data and Defining Performance Measures

Your water quality program should strive to show quantifiable improvements in water quality when possible. As you implement your water quality protection activities, you should begin to develop performance measures to help you determine whether the management measures are addressing the water quality problems for which they were developed. The performance measures you use will vary based on the management measure. For example, if you have implemented a fertilizer management program in partnership with the agricultural community, you may be able to use changes in phosphorus concentrations to measure success. If a management measure is not meant to address a sector-specific water quality problem but instead addresses all NPS (e.g., streambank stabilization and restoration projects), you may be able to use attainment of your WQS or proxies for tribal standards (e.g., state standards) as performance measures. A watershed-based plan can help you make these determinations because in addition to incorporating specific water quality-based goals, a watershed-based plan also incorporates a specific set of criteria that can be used to determine whether these goals are being achieved over time.

III. Mature Program Activities

1. Evaluating Restoration Activities

Using the performance measures you identified in section II.7, you can begin to evaluate the effectiveness of your water quality protection activities. To the extent possible, try to collect enough information through monitoring to make definitive statements about the number or percent of water bodies meeting or moving towards meeting WQS or water quality goals. If you do not have enough data to determine the effectiveness of your activities, identify which data points you need to collect and adjust your monitoring program as necessary. The data requirements for making decisions about whether waters support WQS or water quality goals should be included in your tribe's QAPP or a related document.

Penobscot Indian Nation DNR staff collaborating with state, EPA, and dischargers on a wasteload allocation study of the Penobscot River. Photo courtesy of the Penobscot Indian Nation.

If you find that your measures are not affecting water quality as you anticipated, try to determine why. Are all affected parties implementing the management measures? Are there other sources of the pollutant you are trying to address that are not covered by your management measures? Do you need to implement additional measures that supplement the ones you already have in place? Answer these questions to the best of your ability and modify your approach as appropriate.

As part of your evaluation, you may find it helpful to consider the cost-effectiveness of different types of activities. Calculating the costs for program activities and measuring their benefits can be very challenging, but even a rough analysis may give you valuable information about your program. To the extent possible, see if you can associate specific costs with the implementation of specific program activities. This may be easy to do with a small construction project but more difficult to calculate for a large, multi-year public outreach program. If you can determine rough cost estimates for certain types of activities and understand the general effectiveness of those management measures, you can use that information to help prioritize your pollution control activities. For example, if your monitoring results show that NPS pollution from car fluids has decreased dramatically since you distributed a simple one-page flyer to all community residents, you may want to assign a higher priority to other simple community outreach activities.

2. Providing Updated Information to Your Partners and Community

As your program grows and you begin to see results for your NPS pollution control programs, keep your community informed of changes in water quality. Improved water quality that results from management measures can serve as a source of pride to those people involved in the implementation of the management measure and can spur interest in the program. If the results show that your partnerships have achieved their goals effectively, your partners may be more likely to agree to participate in and commit resources to other projects in the future.

3. Refining Your Assessment Report, Management Program, Source Water Assessment, and Watershed-based Plan

Based on your performance measures and your assessment of your restoration activities, you should refine your assessment report, management program, source water assessment, and watershed-based plan. As noted in section II.1-3 of this chapter, it is important to update and revise your management program and watershed-based plan as you collect more data on NPS pollution and your understanding of your NPS problems improves. You should also update your assessment report to account for changing conditions or new problems on your reservation. Even if you are not applying for Section 319 grants, these tools will help you continue to address NPS pollution on your tribe's land effectively.

4. Coordinating and Cooperating with Other Programs

In some situations, you may find it useful to engage other programs within your tribe (e.g., fish and game programs, tribal planning offices) to avoid duplication of effort, maximize resources, and expedite your program development. You may find coordination and cooperation with other tribal programs especially valuable in developing NPS pollution control programs because of their reliance on voluntary activities and universal participation. You may also find it useful to coordinate with external organizations such as states, universities, or other tribes or coalitions of tribes. Some tribal environmental programs have developed memoranda of agreement (MOAs) or memoranda of understanding (MOUs) with other programs and organizations that identify areas of mutual interest and define the role and responsibility for each tribal program within those areas. For example, in some instances, GIS programs are not part of tribal environmental programs. In these cases, an MOA or MOU between your program and the program that houses the GIS activities could give you access to GIS services and valuable GIS data.

5. Working in Partnership with Other Tribes and States

Other tribes and states, as well as local governments and non-governmental organizations, may conduct water quality protection activities in your watershed. To use limited resources more effectively, you may find it helpful to collaborate with these entities. Jointly sponsoring events or programs can lead to greater participation, raised awareness in the community, and cost savings for each program.

Depending on the types of activities being conducted in your watershed, you may be able to support regulatory programs of neighboring states and tribes, even if your program is nonregulatory. For example, the Penobscot Indian Nation shares its water quality monitoring data with the Maine Department of Environmental Protection not only for resource management and planning purposes, but also Section 305(b) reporting to Congress, which Maine is required to perform. More information is provided in the case study below. For other examples of partnerships you can pursue, see section 1.4 of chapter 6 and section 1.7 of chapter 7.

The Houlton Band of Maliseet Indians (HBMI) and USGS

The partnership that has evolved over the past several years between the HBMI's Water Resources Program and USGS has had numerous benefits for both parties involved, as well as the riverine ecosystem that they are mutually working to protect. USGS provides strong technical and scientific expertise, advanced field sampling equipment, staff training, and QA/QC. In turn, the HBMI offers a vast background of historical information, can effectively respond to storm events, and processes sediment and water samples in their own lab. By combining their efforts, the amount of data collected and analyzed is far greater than what either group could do individually.

6. Other Voluntary Programs

The information included in this chapter does not include all possible voluntary activities your tribal program can support. If voluntary activities not described in detail in this chapter will allow your tribal program to further its water quality goals more effectively, you should consider implementing those activities. EPA maintains information on additional voluntary programs and partnerships on its Voluntary Partnerships Web site, http://www.epa.gov/partners/.

Penobscot Nation DNR staff deploying artificial substrates for sampling aquatic macroinvertebrates. Photo courtesy of the Penobscot Indian Nation.

Why Monitor? Successes of Penobscot Nation Water Quality Monitoring

Section 106 funding has been a critical asset to the Penobscot Indian Nation's (PIN) successful development of an invaluable water quality monitoring program. The PIN, whose unique reservation is the Penobscot River and its islands from Old Town northward, uses Section 106 funds to help carry out water quality monitoring throughout the PIN's reservation, as well as trust land waters. This program is integral to the tribe's efforts to protect its reservation waters, aquatic resources, and traditional uses. Data collected from these monitoring activities are used for a variety of purposes including:

- Short and long term water resources planning
- Setting fish consumption advisories for the Nation
- Tracking water quality
- Surveying water near dischargers to collect indicators of possible noncompliance
- Identifying sources of pollution and developing plans for reduction and future pollution prevention
- Contributing to research projects conducted by academics and consultants who ultimately share their results with the Nation
- Educating Native and non-Native community members on the health of the Penobscot River

The benefits of these efforts flow well beyond the Nation. Through a cooperative agreement with the Maine Department of Environmental Protection (DEP), the Nation shares its data with them for water resources management and planning purposes as well as 305(b) reporting to Congress. Furthermore, the technical capabilities, flexibility in scheduling, more frequent and widespread presence on the river, and ability to respond to emergency situations more quickly have led to the PIN identifying many water quality problems including:

1. A jet fuel spill from a local airport that was detected by a PIN employee, who was doing a routine sampling run, and reported and taken care of in a more timely manner than would have otherwise been possible.
2. A leak from a local gas station that released several thousands of gallons of gasoline into the ground water and ultimately into the Penobscot River, but, because of the PIN, was contained, stopped, and remediated, protecting ground water wells of adjacent neighbors and the river.
3. A lumber mill where the Nation's questions about permit compliance resulted in a $800,000 fine and a consent agreement between the company and the State of Maine.
4. Episodic algae blooms in the river. Nutrient, chlorophyll, and other water quality data have heightened the Maine DEP's awareness of the severity and frequency of algae blooms in the river, leading to improvements in the river model and providing an impetus for developing instream criteria and discharge permit levels for nutrients.

Through the Cooperative Agreement with Maine DEP, the PIN Water Resources Program also provides technical and logistical assistance on a variety of projects including:

1. Wasteload allocation studies that provide important scientific data for the development of a model of the Penobscot and Piscataquis Rivers. These studies are ultimately used to help determine discharge license limits and conditions.

2. Maine's Dioxin Monitoring Program, which examines levels of dioxin in fish above and below suspected sources, including kraft paper mills.

3. A surface water ambient toxic program that examines levels and effects of a variety of toxic contaminants in fish and other biota.

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Penobscot Indian Nation Department of Natural Resources staff monitoring water quality of the West Branch of the Penobscot River with Mount Katahdin in the background. Photo courtesy of the Penobscot Indian Nation.

Chapter 6: Tribal Law Water Quality Protection Approach

Introduction

This chapter is designed for tribes that do not want to develop EPA-approved standards but would nonetheless like to use tribal law to protect water quality on their reservations. Many of the activities described in chapter 7 may be helpful if you are developing tribal standards. Rather than repeat that information here, this chapter includes references to relevant sections in chapter 7 where appropriate. Like those discussed in chapter 7, the activities in this chapter are most appropriate for sophisticated tribal programs.

Many tribal communities have maintained and protected watersheds and waterways for centuries. In those cases, tribes may already have laws and legal systems to protect water quality. These measures may be rooted in tribal law and linked to long-standing tradition and culture. The information provided in this chapter is not intended to supersede any existing tribal law but to provide guidance for tribes that would like basic information on developing standards. You may find that due to the unique culture and traditions of your tribe, some of the information provided in this chapter may not apply.

You should work with your tribal attorney general or equivalent office and the tribal council during this process to make sure that you understand how you can use tribal law to protect water quality. You should also work with your tribal council to make sure you cover all applicable requirements under tribal law for adoption of standards.

Activities Included in Chapter 6

Fundamental Program Activities
1. Understanding Water Quality Standards
2. Understanding What Tribal Standards Can Do
3. Identifying Goals of Tribal Standards
4. Working in Partnership with EPA, Tribes, and States
Intermediate Program Activities
Tribes should begin these activities after having completed the relevant fundamental program activities.
1. Developing Draft Standards
2. Sharing Draft Standards with EPA, Tribes, and States for Review, as Appropriate
3. Conducting Public Outreach
4. Drafting Tribal Code Based on Standards
5. Formally Adopting Standards through Tribal Council
Mature Program Activities
Tribes should begin these activities after having completed the relevant fundamental and intermediate program activities.
1. Implementing Standards
2. Reviewing Standards
3. Developing MOAs with EPA for Permitting Purposes

I. Fundamental Program Activities

1. Understanding Water Quality Standards

Chapter 7 explains the basic structure of standards. Review section I.1 of chapter 7 to understand this structure.

2. Understanding What Tribal Standards Can Do

Developing tribal standards and goals may enable you to protect water on your reservation without EPA-approved standards. In addition, EPA may use technically sound tribal standards as guidance in permitting actions under the CWA based on the circumstances. You may also use tribal standards when reviewing and providing comments to EPA on proposed permits. Section III.3 of this chapter provides more information on working with EPA on permitting issues.

Your tribal legal staff can help you determine where your standards will apply. If you do not have clear authority over some water resources you wish to regulate, you may want to work cooperatively with neighboring governments to ensure adequate protection.

3. Identifying Goals of Tribal Standards

Chapter 7 discusses identifying goals of tribal standards. Review the information in section I.6 of chapter 7 for more information on considerations to keep in mind when defining objectives of standards. Consider any relevant cultural or traditional goals when thinking about your standards goals. If you are not pursuing EPA approval for your standards, you may still want to consider some of the goals the CWA has identified as essential for standards (i.e., protect public health; enhance water quality; restore and maintain the chemical, physical, and biological integrity of waters; achieve protection and propagation of fish/shellfish/wildlife; and recreation). They reflect endpoints that EPA believes are important to achieving the highest water quality possible.

4. Working in Partnership with EPA, Tribes, and States

Working in cooperation with neighboring tribes and states will help you make full use of information and data already developed that may apply to your reservation. As discussed in sections I.5 and I.7 of chapter 7, you can use standards from neighboring tribes and states to help you develop your tribal standards.

If you do not plan to seek EPA approval for your standards, you are not required to take downstream standards into consideration, but doing so may give you a better understanding of the uses water bodies that cross tribal boundaries can meet. You should also consider reviewing upstream standards to gain a better understanding of the quality of waters entering the reservation.

Klamath River Mouth. Photo courtesy of Yurok Tribe.

II. Intermediate Program Activities

1. Developing Draft Standards

Section II.3 of chapter 7 contains information on developing uses, criteria, and antidegradation policies, the key components of standards. If you do not seek EPA approval for your tribal standards, you will not need to comply with the requirements or structure outlined in those sections; however, depending on your tribal needs, you may want to consider those requirements and structure when developing standards.

2. Sharing Draft Standards with EPA, Tribes, and States for Review, as Appropriate

Even if you are not seeking EPA approval for standards, the appropriate EPA Regional WQS Coordinator can serve as a valuable resource to help you develop standards. Consider sharing your draft tribal standards with EPA and neighboring tribes and states for an informal review. Your WQS Coordinator may be able to help you make sure that the standards you have developed will help you achieve the goals you have established. Neighboring tribes and states may be able to offer you suggestions based on their experience implementing standards programs. Working in partnership with your EPA region and neighboring tribes and states may help you develop a more successful standards program and may help you ensure that your standards will work in coordination with neighboring standards.

3. Conducting Public Outreach

Your tribe may have public participation requirements that apply to changes to tribal law. Consult your tribal attorney general or equivalent officer to see if any tribal public participation requirements apply.

In addition, a successful tribal water quality program depends on community involvement and participation. (See section I.12 of chapter 3 for more information on community involvement and participation.) Similarly, community involvement in standards development can lead to successful standards programs. Working in partnership with your community (including potentially regulated entities), watershed groups, and others will help you understand your community's perspective and may give you access to data and information that could increase the effectiveness of your program. In addition, enlisting the support of those affected by the quality of your reservation waters may build support for the standards development process.

4. Drafting Tribal Code Based on Standards

Once you have drafted standards, you will need to pursue some mechanism (e.g., amendment to the tribal code) to incorporate those standards into law on your reservation. You may wish to work with your tribe's legal department during this process. The department can help you with the structure and language of the standards, and it can help you acquire the appropriate approvals and signatures. You may want to share a draft of your tribal code with your tribal council, EPA, and neighboring tribes and states for informal review. They may be able to identify any potential problems, point out additional topics you may want to address, and confirm that the standards you have drafted will help you meet your program goals.

5. Formally Adopting Standards through Tribal Council

Work with your tribe's legal department and your tribal council to formally adopt the standards. Make sure that you have followed all applicable requirements for approval. Once your tribal council has formally adopted your standards, you may be required to notify your community. You should consider doing this as a follow-up to your standards development public outreach activities even if it is not a requirement. An informed and educated community will make it easier for you to implement your standards.

III. Mature Program Activities

1. Implementing Standards

You can implement your tribal standards through a variety of mechanisms, such as limits placed on pollutants discharged by point sources or through controls developed to reduce NPS pollution. You may be able to develop MOAs with EPA for permitting purposes. See section III.3 of this chapter for more information on MOAs. In cases where control of pollution through permits will not allow you to attain standards, or where NPS are the principal sources of pollution, you may rely on your NPS control program to reduce the NPS pollutant load. Chapter 5 contains more information on developing and implementing NPS control programs.

2. Reviewing Standards

Even if you are not required to do so under tribal law, you should consider reviewing your standards periodically and modifying or adopting new standards, if necessary. EPA recommends triennial reviews of standards. When reviewing your standards, consider using the same community involvement mechanisms you used to develop the standards to keep the public up to date and involved. Your tribe may have specific public notification requirements with which you must comply to modify or change standards. Prior to any public hearing, consider making any proposed revisions, including supporting analyses, available to the public. When you begin activities to revise or adopt new standards, consider consulting with your EPA regional office, neighboring states, watershed groups, and others.

During your standards review, you may want to consider the following:

- New federal or tribal statutes, regulations, or guidance
- Legal decisions involving the application of standards
- Water bodies or segments that do not meet designated uses
- Water bodies with designated uses that do not meet the fishable/swimmable use
- Other necessary clarifications or revisions

3. Developing MOAs with EPA for Permitting Purposes

Even if you have not developed EPA-approved WQS and cannot issue federally approved permits, you can work in collaboration with EPA and states to help them enforce permits and make compliance determinations. In many cases, states and tribes have developed cooperative agreements that promote consultation, sharing of technical information, notification of permitting issues, and joint tribal/state programming. You can expand your role in assisting permitting authorities through MOAs with neighboring states. Some states and tribes have entered into MOAs to share enforcement-related files and information that may have an adverse impact on tribal water bodies. In addition, some tribes have entered into formal agreements with states developing TMDLs on rivers and lakes that include transboundary waters. This approach enables tribes to use their own or EPA-approved WQS in setting appropriate protection levels.

Depending on the nature of your MOA, you may want to consider taking the lead in investigating complaints and other issues. You can also document and report any compliance problems to EPA or to the appropriate permitting authority.

Chapter 7: EPA-Approved Water Quality Protection Approach

Introduction

This approach to water quality management uses a regulatory framework based on the CWA structure to control water quality. Tribes that use this approach will develop and establish federally approved water quality standards (WQS). This is an approach that many tribes have followed already to develop their tribal water quality programs. WQS will serve the dual purpose of establishing the water quality goals for a specific water body and serving as the regulatory basis for establishment of water quality-based treatment controls. These water quality-based treatment controls include Section 401 certification, National Pollutant Discharge Elimination System (NPDES) permits, and enforcement actions. The activities discussed in the chapter are most appropriate for sophisticated programs with many years of experience.

EPA has published detailed guidance on issues related to developing WQS, including specific guidance for tribes. **This guidance is not intended to duplicate these technical guidance documents; instead, it provides an overview of the major elements of WQS and directs you to appropriate sources of information. Consult the appropriate Regional WQS Coordinator before you begin to develop WQS.**

EPA Water Quality Standards

Note: EPA water quality standards are only for the protection of surface waters of the U.S. They are not applicable to ground water.

Because tribes choosing this approach will be developing regulatory programs for federal approval, they must comply with specific requirements. EPA's Office of Science and Technology (OST) has written a general guidance for developing standards and a reference guide for Indian tribes. In addition, OST maintains a WQS Web site that includes links to all approved tribal WQS. More information on these resources is provided in the box below.

Reference Materials Related to WQS Development

EPA's *Reference Guide to Water Quality Standards for Indian Tribes* (EPA 440/5-90-002), available online at http://epa.gov/waterscience/tribes/refguide.pdf, contains more information on tribal considerations in developing WQS. It also lists sources of information that you can consult to help you understand and develop standards.

EPA's *Water Quality Standards Handbook: Second Edition* (EPA-823-B-94-005), available online at http://www.epa.gov/waterscience/standards/handbook/, contains technical information on all aspects of WQS development, including requirements for tribes and issues related to adoption of tribal standards.

OST's Water Quality Standards Policy and Guidance Web site, http://www.epa.gov/waterscience/standards/policy.htm, contains links to policy and guidance documents. Consult this site for a complete list of all EPA WQS resources. Approved standards for states, tribes, and territories are posted on http://www.epa.gov/waterscience/standards/wqslibrary/.

Activities Included in Chapter 7

Fundamental Program Activities

1. Understanding Water Quality Standards
2. Understanding Section 401 Certification
3. Understanding Section 404 Permitting
4. Using EPA WQS Trainings and Educational Materials
5. Reviewing Existing Tribal and State Water Quality Standards
6. Identifying Goals of Tribal Regulatory Program
7. Working in Partnership with EPA, Tribes, and States

Intermediate Program Activities

Tribes should begin these activities after having completed the relevant fundamental program activities.

1. Applying for TAS Eligibility for a WQS Program and a Section 401 Certification Program
2. EPA Review of Tribal Application for TAS Eligibility for WQS Program and Section 401 Certification
3. Developing Standards..... *Working With EPA, Tribes, and States*
   Reviewing EPA Regulation and Guidance
   Designating Uses
   Developing Criteria
   Developing an Antidegredation Policy
   Developing General Policies
4. Submitting Draft WQS for Formal Public Hearing and Comment
5. Formally Adopting WQS through Tribal Council
6. Submitting Adopted WQS for EPA Approval
7. Understanding EPA's WQS Review Process..... *Approved WQS*
   Disapproved WQS
8. Understanding EPA's Dispute Resolution Process

Mature Program Activities

Tribes should begin these activities after having completed the relevant fundamental and intermediate program activities.

1. Implementing WQS
2. Implementing Section 401 Certifications
3. Assuming the Section 404 Program
4. Conducting Triennial Reviews
5. NPDES Program Overview
6. Sources Regulated Under the NPDES Program
7. Understanding NPDES Permits
8. Reviewing Permits
9. Considering NPDES Program Authorization
10. Developing Capabilities for Permitting, Compliance, and Enforcement
11. Preparing for NPDES Program Authorization..... *Developing Tribal Code and Obtaining Approval from the Tribal Government*
    Inventorying Existing Point Sources
    Establishing Sources of Funding to Run the NPDES Program
12. Obtaining NPDES Program Authorization
13. Working with EPA to Transition from Federal to Tribal Implementation
14. Conducting Public Outreach

EPA Regional WQS Coordinators

EPA's Regional WQS Coordinators play a key role in working one-on-one with tribes to develop WQS. You should work closely with your regional WQS Coordinator throughout the WQS development process. You can obtain contact information for your regional WQS Coordinator on OST's Web site, http://www.epa.gov/waterscience/standards/regions.htm.

This chapter also provides information about the WQS program authorization process. Before EPA can approve a tribe's water quality standards under the CWA, it must approve the tribe's application for TAS eligibility to administer the WQS program.

As noted in chapter 4, analysis of your monitoring data can provide useful inputs to development of your WQS. Before you attempt to regulate the quality of waters on your reservation, you should know their current condition. Monitoring data will help you understand the natural variability in water quality data, make informed management decisions, and identify sources most severely affected by point source and NPS pollution. Monitoring results will also help you identify specific parameters of concern (e.g., high levels of toxic chemicals) for water bodies on your land. Once you have developed and implemented a WQS program, your monitoring program will help you assess whether your water bodies are meeting the criteria for their designated uses and determine the effectiveness of your standards. A strong monitoring and assessment program complements and improves a WQS program.

Testing water quality on the Verde River. Photo courtesy of Salt River Pima-Maricopa Indian Community

EPA-approved WQS serve as the basis for water quality-based effluent limits for facilities with NPDES permits that are discharging to waters of a reservation covered by the standards. A tribe may also evaluate whether discharges under a federal license or permit will be consistent with its WQS when granting, denying, or conditioning a water quality certification under Section 401 of the CWA. Facilities developing or renewing NPDES permits or other federal licenses or permits for discharging to waters of a reservation must have their federal permits or licenses certified by the tribe under CWA Section 401 (unless certification is waived). The tribe and EPA will refer to the tribal WQS when identifying whether waters are impaired and developing total maximum daily loads (TMDLs) under Section 303(d) of the CWA. Finally, effluent limitations for a permit to discharge upstream from tribal waters must assure compliance with downstream federally approved standards.

Federal WQS for Reservation Waters

Tribes may adopt EPA-approved WQS to enhance the ability to include appropriate effluent limits in CWA permits for point source discharges into reservation waters. In situations where tribes have not adopted EPA-approved WQS, EPA may consider adopting federal WQS for reservation waters. EPA, however, prefers to work cooperatively with tribes and states on WQS issues and to initiate federal promulgation only when absolutely necessary.

I. Fundamental Program Activities

1. Understanding Water Quality Standards

WQS apply to "waters of the United States." For tribes, these can include rivers, streams, intermittent streams, lakes, natural ponds, wetlands, estuaries, and near-shore coastal waters that are within the tribe's reservation. The statutory basis for EPA's WQS program is located in Section 303(c) of the CWA. According to this Section, the purpose of WQS is to support the following goals found in Section 101(a) of the CWA:

- Restoring and maintaining the chemical, physical, and biological integrity of waters
- Achieving, whenever attainable, a level of water quality that provides for the protection and propagation of fish, shellfish, and wildlife and for recreation in and on the water

WQS consist of three components: designated uses, water quality criteria, and an antidegradation policy. WQS define the water quality goals for a water body by designating its **use(s)** (e.g., recreation, water supply, aquatic life) and setting **water quality criteria** (e.g., numeric pollutant concentrations, narrative requirements) to protect the use(s). WQS must also include an **antidegradation policy**. The policy must at a minimum maintain and protect existing uses (i.e., prevent water quality from deteriorating), protect high-quality waters, and maintain water quality in water bodies designated as Outstanding National Resource Waters (ONRWs). In addition, tribes may, but are not required to, include in their WQS policies that address implementation issues (e.g., low-flow conditions, variances from WQS, and mixing zones near point source discharges).

Outstanding National Resource Waters

ONRWs are generally regarded as the highest quality waters of the United States; however, other water bodies that are unique, or ecologically sensitive but of lower quality (e.g., wetlands), also can be classified as ONRWs. This classification is intended to protect and maintain current water quality. Therefore, no degradation or change in water quality is allowed, except on a short-term, temporary basis (i.e., weeks or months). California's Lake Tahoe, Florida's Biscayne Bay, and Tennessee's Reelfoot Lake are examples of water bodies designated as ONRWs.

WQS serve as the basis for water quality-based control actions (e.g., a NPDES permit, a water quality certification for a federal license). WQS do not impose any directly enforceable requirements on any party, however. WQS will have no direct effect on any entity until they are implemented in a permit or some other CWA decision. Once WQS have been implemented in a permit, the permit can be enforced. The CWA does not require authorized tribes to regulate NPS pollution through enforceable controls, although tribes can determine what, if any, controls on NPS pollution are needed to attain WQS.

EPA recognizes that tribes have varying abilities to develop WQS. Some tribes have more technical capability and experience in drafting and implementing regulations and may be capable of adopting more complex standards. Regardless of your tribe's level of expertise, as a first step you should focus on the basic structure of WQS (i.e., designated uses for identified water segments, appropriate narrative and numeric criteria, and an antidegradation policy). The complexity and sophistication of the structure you adopt will depend on your program's abilities and the environmental concerns you wish to address.

WQS development is an ongoing process. The CWA and federal regulation require triennial revisions of WQS (see section III.4 of this chapter for more information on triennial reviews). Tribes and states use triennial reviews to fine tune WQS. EPA anticipates that tribal staff will also use triennial revisions to further refine their WQS.

Examples of EPA-approved tribal WQS, including designated uses, are available online at http://www.epa.gov/waterscience/standards/wqslibrary/tribes.html.

2. Understanding Section 401 Certification

Section 401 of the CWA provides eligible tribes with a powerful mechanism to regulate discharges to waters on Indian reservations. Under Section 401 of the CWA, tribes with approved WQS can review and approve, condition, or deny any federal permits or licenses that may result in a discharge to reservation waters for which the tribe has developed approved WQS. As stated in 40 CFR 131.4, your tribe is eligible for TAS for Section 401 certification purposes if your tribe is determined to be eligible for TAS for the WQS program.

The Section 401 certification process allows your tribe to certify, condition, or deny permits or licenses based on whether the activity will comply with your tribe's EPA-approved WQS. In addition, you can examine whether the activity will violate effluent limitations, toxic pollutant limits, and other water resource requirements of tribal law or regulation. This means that a facility with a NPDES permit or other federal license or permit discharging into reservation waters for which you have developed approved WQS will be required to obtain a 401 certification from your tribe when renewing the permit or license. More information about Section 401 certifications is available online at http://www.epa.gov/OWOW/wetlands/regs/sec401.html.

3. Understanding Section 404 Permitting

Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill material into waters of the United States, which includes wetlands. Discharges into waters of the United States that are regulated under this program include, but are not limited to, fills for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and conversion of wetlands to uplands for farming and forestry. The basic premise of the program is that no discharge of dredged or fill material can be permitted if a practicable alternative exists to achieve the project purpose that is less damaging to the aquatic environment or if a water body would be significantly degraded by the placement of dredged or fill material. The U.S. Army Corps of Engineers (the Corps) issues Section 404 permits based on CWA Section 404(b)(1) guidelines written by EPA (40 CFR Part 230). EPA and the Corps both have enforcement authority over 404 discharges.

States and tribes can assume administration of the Section 404 permit program in certain waters within their jurisdictions. Since authority has been available to states and tribes, only two states have elected to assume the federal program.

4. Using EPA WQS Trainings and Educational Materials

EPA holds a number of training sessions, workshops, and meetings related to WQS development and implementation. If you would like more information on the basics covered in this guidance, you should consider using EPA's educational materials. The WQS Academy, for instance, offers a basic WQS course that introduces students to all aspects of the WQS program, including the interpretation and application of WQS regulation, policies and program guidance, the development of water quality criteria, and other facets of the water program. From time to time, EPA also conducts specialized workshops on WQS development for Indian tribes. More information on the WQS Academy, other long-distance training opportunities, and guidance documents are available online at http://www.epa.gov/waterscience/standards/training.htm.

5. Reviewing Existing Tribal and State Water Quality Standards

As you begin to develop WQS for your tribe, EPA recommends that you work closely with the water quality standards coordinator in the appropriate EPA regional office to obtain the latest criteria recommendations and to discuss the adjacent state and tribal WQS as an option or starting point for your tribal WQS. You are required to take into consideration and ensure the attainment and maintenance of downstream WQS when developing your WQS (40 CFR 131.10). Hence, as a first step you may benefit from reviewing downstream tribal and state standards. You may decide to use them as a basis for your standards. This is an expedient way of getting WQS in place. If necessary, they can then be revised during the triennial review process. You can also use downstream tribal and state standards to gain an understanding of existing conditions in your area, EPA's expectations for approved standards, and WQS in general.

OST maintains a list of all EPA-approved state standards online at http://www.epa.gov/waterscience/standards/states/. EPA-approved tribal standards are available online at http://www.epa.gov/waterscience/standards/wqslibrary/tribes.html.

6. Identifying Goals of Tribal Regulatory Program

WQS should achieve the goals outlined in section I.1 of this chapter (protect public health or welfare, enhance water quality, and otherwise serve the purposes of the CWA). Before developing WQS, however, tribes may want to consider specific environmental problems that standards could address. WQS can be a very useful tool for some environmental programs. Some tribes have used WQS to help the program achieve goals such as providing guidance about existing water quality, protecting aquatic life, defining allowable levels and types of discharges, helping to establish priorities for the allocation of treatment resources and cleanup efforts, and ensuring additional protection for waters used as drinking water supplies. EPA-approved WQS do not apply to ground water; hence, tribes where surface water is scarce may find that standard development may not help them achieve their goals most effectively. After an evaluation of standards in relation to its overall program goals, a tribal water quality program may decide that development of WQS will not help achieve its goals in the most effective way. Tribes reaching this determination may elect to pursue one of the other routes for program development presented in this guidance and described in chapters 5 and 6.

7. Working in Partnership with EPA, Tribes, and States

Sound environmental planning and management suggest that you collaborate with neighboring tribes and states and EPA. Particularly in the field of environmental regulation, your tribe, neighboring states, and EPA often share the same problems, and coordination may help you to address them comprehensively. Working together to resolve these problems serves the interests of all parties. You may also benefit by contacting other organizations in your watershed, including local governments and watershed organizations.

EPA can provide technical expertise and guidance, and thus strongly encourages tribes to work with their EPA Regional WQS Coordinator well before adopting and submitting WQS to EPA for approval. Working together early in the development process will help prevent problems that may lead to EPA disapproving a tribal submission later on. Likewise, working with your neighboring states as you develop your standards may be helpful.

In some cases, you may want to work even more closely with neighboring tribes and states. Depending on circumstances, you may choose to negotiate a cooperative agreement with a neighboring tribe or state regarding standards on common water bodies or adopt the standards of an adjacent state as your own, making modifications as needed. When available, these options can be quick and cost-effective ways of establishing WQS and may be more likely to result in consistent upstream and downstream standards for water bodies that flow through the reservation.

Even if you find that your tribe and neighboring tribes or states disagree on some topics, many points of agreement and cooperative partnership between states and tribes that can benefit both parties can be negotiated. Usually, these agreements have focused on information exchanges and transboundary coordination, much like agreements commonly reached between states. Some agreements have also allowed tribes to access state resources, such as training and on-the-ground work to protect water resources.

Approaches to WQS Development

Remember that the development of WQS is an iterative process. As your WQS program evolves, you may change your approach for establishing standards. You may adopt existing state standards initially and modify them as necessary in subsequent years. The WQS regulation requires that you review EPA-approved WQS at least once every 3 years and revise them if necessary.

II. Intermediate Program Activities

1. Applying for TAS Eligibility for a WQS Program and a Section 401 Certification Program

As is the case with obtaining eligibility for Section 106 grants, you must obtain EPA approval for TAS for the WQS program to have your standards approved by EPA under the CWA. To be approved for WQS program eligibility, you must meet the TAS requirements of CWA Section 518 and 40 CFR 131.8. See section I.1 of chapter 3 for a summary of some of the CWA Section 518 statutory requirements. If you have TAS eligibility for Section 106, you may have met some of these requirements already. You may have to submit only information not submitted previously or resubmit information that is no longer current.

Refer to appendix B, *Requirements and WQS Regulations for Program Authority,* for a checklist of some of the items to be included with WQS program authorization applications. See CWA Section 518 and 40 CFR 131.8(b) and contact the EPA Regional WQS Coordinator for information on specific requirements that you must include in your application to the EPA Regional Administrator (RA).

EPA will work individually with the tribe making the application for eligibility for the WQS program to ensure that the application is complete and meets all of EPA's requirements. EPA strongly recommends that you contact the appropriate EPA WQS Coordinator and the Office of Regional Counsel to discuss specifics before you submit your application for program eligibility. EPA's WQS Coordinators are also available to assist you in developing WQS for your reservation prior to obtaining authorization to conduct the WQS program.

Although a tribe can submit a TAS eligibility application and an application for WQS approval together, EPA will not approve a tribe's WQS until it has approved the eligibility application. A tribe that receives eligibility approval for WQS from EPA is also approved to conduct the Section 401 certification program on reservation lands and certify that federally licensed discharges comply with the tribe's EPA-approved WQS. There is no separate application for the Section 401 certification program.

2. EPA Review of Tribal Application for TAS Eligibility for WQS Program and Section 401 Certification

The EPA process for reviewing tribal applications for TAS eligibility for the WQS program consists of five steps. They are:

- **Step 1: The Tribe Submits an Application.** Tribes are encouraged to work with EPA staff in developing their eligibility application to administer a WQS and certification program. Drafts or components of the application may be shared with EPA staff before being formally submitted to EPA. EPA will examine the tribe's application and may request additional information.

- **Step 2: Comment Period.** EPA then provides appropriate governmental entities with notice of the tribe's application, including information as to the substance and basis of the tribe's claims regarding authority to regulate reservation water quality, and provides 30 days for comments on the tribe's application. EPA also publishes a notice in relevant newspapers, offering the public the opportunity to provide comments through appropriate governmental entities. EPA then affords the applicant tribe the opportunity to provide a response to the comments.

- **Step 3: EPA Review.** A team of EPA regional and headquarters staff reviews the application to determine whether the tribe meets the requirements for eligibility listed above. If necessary, EPA may request additional information from the tribe.

- **Step 4: Proposed Findings of Fact (if needed).** Where appropriate, EPA prepares a proposed findings of fact document regarding tribal authority that would form a basis for EPA's decision on whether the tribe has adequate authority as described above. EPA provides the tribe, appropriate governmental entities, and the public with the opportunity to comment on the analysis in the proposed findings of fact. The tribe applying for eligibility is given the opportunity to respond to comments received.

- **Step 5: Final Decision.** The EPA team reviews all of the materials — including the original application, any proposed findings of fact, and all comments submitted — prepares draft decision documents, including a response to comments, and submits them for final review within the Agency. The RA (or delegatee) then makes a final decision and, if EPA approves the application, produces a decision document, with the findings of fact as an appendix if needed. The regional office will notify the tribe in writing of EPA's approval of the tribe's application. The approval letter and the decision document are transmitted to the tribe.

3. Developing Standards

a. Working with EPA, Tribes, and States

You should consider sharing your draft standards with your EPA region and neighboring states and tribes, or working with them to develop your draft standards. Working with your EPA Regional WQS Coordinator as you develop your standards may help prevent problems that could lead to EPA disapproving your submission later on. Similarly, working with neighboring states and tribes as you develop your standards will promote coordinated water quality protection.

EPA's *Water Quality Standards Handbook* (referenced on page 7-1 of this chapter) contains technical guidance on developing standards. In addition, this section provides some basic information you should consider.

As mentioned in section I.7 of this chapter, it is important to work with your EPA regional office early in the WQS development process and share drafts of your tribe's WQS as they are developed. Once you have developed draft standards and have completed the public participation requirements as laid out in section II.2 of this chapter,

your tribe may adopt the WQS. When the WQS are tribally adopted, you must submit them to EPA to receive approval for your WQS.

b. Reviewing EPA Regulation and Guidance

Although you have some flexibility in the standards you adopt, they must meet some basic requirements. At a minimum, EPA expects that tribal WQS, at least initially, should focus on basic contents and reflect existing uses and existing water quality. The standards must be established for all "waters of the United States" within the reservation area covered by the application. Tribes should focus on the basic structure of a WQS system (designated uses, water quality criteria to protect the uses, and an antidegradation policy). How complex or sophisticated these elements need to be depends on the tribes' technical capacity and the environmental concerns to be addressed.

Tribal WQS should be developed considering the quality and designated uses of waters entering and leaving reservations. It is important that tribes be aware of the WQS of surrounding states and tribes. Even though there is no requirement to match those standards, WQS regulation requires that tribes consider and ensure the attainment and maintenance of downstream WQS (40 CFR 131.10).

See section 1.9.1 of EPA's *Water Quality Standards Handbook* for more information on EPA's basic expectations for tribal WQS. Section 2.2 of the handbook discusses consideration of downstream uses.

c. Designating Uses

Use classifications refer to the types of activities you expect water bodies to support. You must develop a classification system to designate uses for water bodies or segments of water bodies on your reservation. You may adopt and use any categories appropriate for your tribe that meet all applicable requirements when developing uses. You may also adopt subcategories of a use (e.g., you could divide the "recreation" use into two subcategories, recreation in the water and recreation on the water). For more information on designated uses, see 40 CFR 131.10. General categories for designated use include:

- **Public Water Supplies**: Waters that are drinking water sources. They may require treatment prior to distribution by public water systems.

- **Protection and Propagation of Fish, Shellfish, and Wildlife**: This category is often divided into subcategories (e.g., cold-water fish, warm-water fish). It can also include protection of aquatic flora. You should designate aquatic life uses that appropriately address biological integrity and adopt biological criteria necessary to protect those uses.

- **Recreation**: This category is traditionally divided into primary and secondary contact recreation. Primary contact includes activities likely to result in immersion in the water (e.g., water skiing, swimming, surfing). Secondary contact includes activities when immersion is unlikely (e.g., boating, fishing, rafting).

- **Agriculture and Industry**: Agricultural use defines waters suitable for crop irrigation, livestock consumption, support of vegetation for range grazing, and other uses that support farming and ranching and protect livestock and crops from injury. Industrial uses include industrial cooling and processed water.

- **Navigation**: This use protects ships and crews and maintains water quality to avoid restricting or preventing navigation.

- **Other Uses**: You may adopt other uses that you think are necessary, such as any tribally relevant traditional or cultural uses, aquifer protection, or hydroelectric power.

When designating uses, remember that water bodies can support more than one use. Criteria for waters with multiple use designations must support the most sensitive use, as required by 40 CFR 131.11(a). You can designate uses for entire water bodies or segments of water bodies. When designating uses, you should take physical, chemical, and biological characteristics of the water body into account. You should also consider its geographical setting, scenic qualities, and any relevant economic considerations. In addition to the minimum uses required by the CWA (i.e., aquatic life use, wildlife use, and primary contact recreation use), you can designate other uses as appropriate, but you must ensure that your water quality criteria (discussed below) protect the most sensitive use, as required by 40 CFR 131.11(a).

CWA Section 101(a)(2) states that it is a national goal that wherever attainable:

1. **protection and propagation of fish, shellfish, and wildlife, and**
2. **recreation in and on the water**

be achieved. As a result, all waters are designated for these two uses at a minimum unless a use attainability analysis is provided. A use attainability analysis is a structured scientific assessment of the factors affecting the attainment of a use that may include physical, chemical, biological, or economic factors described in 40 CFR 131.10(g). It also examines whether the water body can attain fishable/swimmable use through effluent limits for point dischargers and cost-effective management measures for NPS. As required by 40 CFR 131.20(a), every 3 years you must re-examine those water bodies where designated uses of fishable/swimmable were not deemed attainable to determine whether new information has become available that indicates the fishable/swimmable uses can be attained.

Waste Transport and Waste Assimilation

In no case may you adopt waste transport or waste assimilation as a designated use for any waters of the United States. You also may not replace a designated use with a designated use that is lower than the use currently being attained.

When establishing WQS for the first time, you should carefully consider the uses that are appropriate for each water body or segment. Removing or downgrading a designated use, while possible, requires a substantial demonstration that attaining the use is not possible. (See section 2.7 of the *Water Quality Standards Handbook* for more information on removing designated uses.) You may always add a use and develop scientifically defensible criteria to protect that use.

Chapter 2 of EPA's *Water Quality Standards Handbook* contains information on developing water body uses. For more information on use attainability analyses, consult EPA's *Technical Support Manual for Conducting Use Attainability Analyses* (EPA 440-486-038). Pages 1-233 apply to rivers and streams, pages 234-422 apply to estuarine systems, and pages 422-622 apply to lakes. The manual is available online at http://www.epa.gov/waterscience/library/wqstandards/uaavol123.pdf.

Use Classifications for Wetlands (from EPA's *Water Quality Standards for Wetlands* Handbook, EPA 440/S-90-011)

- Ground water recharge/discharge
- Flood flow alteration
- Sediment stabilization
- Sediment/toxic retention
- Nutrient removal/transformation
- Wildlife diversity/abundance
- Aquatic diversity/abundance
- Recreation

You can obtain the *Water Quality Standards for Wetlands* handbook online at http://www.epa.gov/waterscience/library/wqstandards/wetlandsguidance.pdf.

d. Developing Criteria

Water quality criteria are levels of individual pollutants, water quality characteristics, or descriptions of a water body that, if met, protect designated uses. Water quality criteria can consist of numeric criteria or narrative descriptions of conditions a water body must meet (narrative criteria). In some cases, narrative criteria can supplement numeric criteria.

Numeric criteria establish values expressed as levels, concentrations, toxicity units, or other numbers, deemed necessary to protect designated uses. Numeric criteria can refer to chemical (e.g., phosphorus), physical (e.g., temperature), or biological (e.g., the types and numbers of aquatic species that should be present in the water bodies) parameters. Numeric criteria are appropriate for known causes of toxicity and for protection against pollutants with potential human health effects. Numeric criteria may be values not to be exceeded (e.g., toxic chemicals), values that must be exceeded (e.g., dissolved oxygen), or a range (e.g., pH).

Narrative criteria are general statements designed to protect a specific designated use or set of uses (e.g., "free from substances that will produce undesirable or nuisance aquatic life"). Narrative criteria are especially important for the control of NPS, chemicals with no numeric criteria, and activities that may affect the physical or biological aspects of water quality.

See 40 CFR 131.11 for more information on numeric and narrative criteria.

EPA publishes recommended water quality criteria consisting of scientific information on concentrations of specific chemicals or levels of parameters in water that protect aquatic life and human health, as required by Section 304(a) of the CWA. You should consider this information, along with recommended criteria, as the basis for developing WQS. Criteria must be based on a sound scientific rationale and must contain appropriate parameters or constituents to protect designated uses. Section 303(c)(2)(B) requires that you adopt numeric criteria for priority toxic pollutants for which EPA has developed Section 304(a) recommendations and that may be discharged or present in your waters and impair designated uses. You are also encouraged to adopt numeric and narrative criteria for other pollutants. If you adopt narrative criteria, you must develop implementation procedures to explain how you will regulate point source discharges of priority toxic pollutants in impaired waters. In adopting criteria, tribes may:

- Adopt the criteria that EPA publishes periodically as required under Section 304(a) of the CWA
- Modify the Section 304(a) criteria to reflect site-specific conditions
- Adopt criteria based on other scientifically defensible methods

Narrative Criteria

EPA's most recent Section 304(a) criteria summary document includes the following narrative criteria:

All waters [shall be] free from substances attributable to wastewater or other discharges that:

- Settle to form objectionable deposits
- Float as debris, scum, oil, or other matter to form nuisances
- Produce objectionable color, odor, taste, or turbidity
- Injure or are toxic or produce adverse physiological responses in humans, animals, or plants
- Produce undesirable or nuisance aquatic life

The most recent criteria published under Section 304(a) of the CWA are available online at http://www.epa.gov/waterscience/criteria/wqcriteria.html. Other than the requirement to adopt criteria for a specific list of priority toxic pollutants wherever they are reasonably expected to interfere with designated uses, EPA has not established mandatory lists of criteria. For numeric criteria for toxics, states and tribes usually rely on EPA's recommended values, rather than on monitoring results. At a minimum, however, you should consider all of EPA's published Section 304(a) criteria. These include:

- Narrative "free froms" (e.g., free from substances that will produce undesirable or nuisance aquatic life)
- Dissolved oxygen
- pH
- Temperature
- Bacteriological criteria (for recreational use, and potentially for cultural and traditional uses)
- The list of non-priority pollutants in EPA's Section 304(a) recommended water quality criteria

Great Lakes Basin Requirements

Tribes located within the Great Lakes Basin are required to comply with all of the requirements of the Great Lakes Water Quality Guidance when adopting WQS under the CWA, including adopting specific water quality criteria. Information on Great Lakes Basin requirements is available online at http://www.epa.gov/waterscience/GLI.

If you think these regulations may apply to you, you should consult your EPA regional office. For further information, contact the Great Lakes National Program Office. To see a map of the Great Lakes Basin, visit http://www.epa.gov/glnpo/atlas/ and click on "Ecoregions, Wetlands, and Drainage" under the heading *List of Maps* near the bottom of the page.

Chapter 3 of the *Water Quality Standards Handbook* contains more information on adopting criteria that protect designated uses. Chapter 4 of EPA's *Water Quality Standards for Wetlands* contains additional information on narrative and numeric criteria. In addition, a compendium of EPA's National Recommended Water Quality Criteria can be found at http://www.epa.gov/waterscience/criteria/wqcriteria.html.

e. Developing an Antidegradation Policy

Your WQS must include an antidegradation policy. In addition, you must identify the methods for implementing the policy. Stated simply, antidegradation policies must ensure that all existing water body uses are maintained in all water bodies. Antidegradation policies must maintain and protect high-quality waters, as well as water quality of ONRWs. Tribes must identify their antidegradation implementation procedures. Antidegradation implementation procedures identify the steps and issues to be addressed when proposed regulated activities (e.g., new development projects) may affect water quality. Your policy must be consistent with 40 CFR 131.12.

For those tribes located within the Great Lakes Basin, antidegradation policies must be consistent with both 40 CFR 131.12 and 40 CFR Part 132, Appendix E. There are additional implementation procedures for bioaccumulative chemicals of concern that tribes in the Great Lakes Basin are required to adopt.

The federal antidegradation policy (listed in 40 CFR 131.12(a)) consists of three tiers protecting different levels of uses:

- **Tier 1**: Protects existing uses (i.e., those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the WQS), applying a minimum level of protection to all waters.

- **Tier 2**: Applies to waters whose quality exceeds that necessary to support the goals of the CWA. The quality of these waters cannot be lowered to less than the level necessary to protect the fishable/swimmable uses and other existing uses, and can only be lowered to these levels after you show that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located.

- **Tier 3**: Applies to ONRWs where ordinary use classifications or supporting criteria may not be sufficient or appropriate. You may choose to classify specific waters as ONRWs. This may be an appropriate classification for unique waters such as those located in tribal wilderness areas or wildlife refuges. Classifying a water body as an ONRW is often the most effective approach to protecting high-quality or ecologically significant water resources, but remember that this classification may restrict or preclude significant development activities both on and off your reservation because of its stringent prohibitions against any lowering of water quality.

Some tribes have developed an additional Tier, Tier 2 ½. This tier is more stringent than Tier 2 but less stringent than Tier 3.

Your antidegradation policy cannot permit any activity that would partially or completely eliminate any existing use.

Public participation and intergovernmental coordination can make a tribe's antidegradation policy and implementation procedures more effective. Requirements for public participation and intergovernmental coordination when determining whether to allow lower water quality in high-quality water are detailed in 40 CFR 131.12(a)(2).

Consult chapter 4 of EPA's *Water Quality Standards Handbook* for more information on antidegradation policies.

f. Developing General Policies

You may also adopt policies in your standards that affect how you apply and implement those standards. Policies on mixing zones, variances, and low flows are the most common general policies. These policies are subject to EPA review and approval. You may implement other general policies that apply to your standards with the approval of your EPA regional office.

A **mixing zone** is a limited area or volume of water where a discharge enters a water body and numeric criteria may be exceeded as long as acutely toxic conditions are avoided. It serves as an area where the original discharge is diluted. In some cases, it may be appropriate for you to designate a mixing zone. If you implement a mixing zone policy, your WQS should describe the methodology for determining the location, size, shape, outfall engineering design, and in-zone water quality of mixing zones. You must give careful consideration to the appropriateness of mixing zones where the substance discharged is persistent in the environment (i.e., only slowly decomposes into other substances), accumulates in aquatic life, or causes cancer. Mixing zones for bioaccumulative chemicals are prohibited in the Great Lakes Basin because of the threat that these chemicals pose to human health, aquatic health, and wildlife. For more information on this prohibition, see 40 CFR Part 132 or visit http://www.epa.gov/waterscience/GLI/mixingzones/.

Members of the Karuk Tribe of California fishing for salmon. Photo courtesy of the Karuk Tribe of California.

Variances can serve as an alternative to downgrading the designated use of a water body through a use attainability analysis if you believe that the use ultimately can be achieved. You may grant variances for specific pollutants to an individual discharger. Controlling discharges via a variance instead of designating a use requiring less stringent criteria can help you ensure that water quality in the water body continues to improve. The variance must be justified based on one of the six factors listed in 40 CFR 131.10(g).

You may designate a critical **low-flow** volume below which numerical criteria do not apply; however, narrative criteria must be applied even in low-flow situations. Low-flows are used in developing water quality-based effluent limits and waste load allocations. These policies are also subject to review and approval by EPA.

Consult chapter 5 of EPA's *Water Quality Standards Handbook* for more information on general policies.

4. Submitting Draft WQS for Formal Public Hearing and Comment

Development of WQS under the CWA requires public involvement and participation. CWA Section 303(c)(1) requires that, at a minimum, you hold a public hearing to review proposed WQS and make the results of that review available to the Administrator. EPA urges you to involve the public even more actively in helping to establish WQS through public hearings and workshops. Public hearings must comply with applicable tribal law,

EPA's Public Participation Regulation (40 CFR Part 25), and EPA's WQS regulation. Prior to the hearing, you must make the proposed WQS and any applicable supporting materials (e.g., analyses of water quality) available to the public. Section I.12 of chapter 3 and section II.3 of chapter 6 have more information on conducting public outreach.

5. Formally Adopting WQS through Tribal Council

Before you can submit your standards to EPA for approval, you must adopt the standards as tribal law. EPA will not formally approve any tribal WQS unless they have been adopted by the tribal council, and you have submitted a certification stating that the WQS have been approved by the tribal council to EPA. You must include a certification from your tribal attorney general or equivalent officer with your WQS package to indicate that the WQS were adopted in accordance with tribal laws and codes and can be implemented in accordance with tribal laws and codes. Sections II.4 and II.5 of chapter 6 contain more information on adoption of standards as part of tribal law.

6. Submitting Adopted WQS for EPA Approval

After your tribe has approved your WQS, you must formally submit the tribally adopted WQS to EPA for review. Include the following elements in your submission:

- Use designations consistent with CWA Sections 101(a)(2) and 303 (c)(2)
- Methods used and analyses conducted to support WQS
- Water quality criteria sufficient to protect designated uses (including those for priority toxic pollutants and biological criteria)
- An antidegradation policy consistent with WQS regulation 40 CFR 131.12
- Certification by the appropriate legal authority within your tribe that the WQS were duly adopted according to tribal law
- General information to help EPA determine the adequacy of the WQS' scientific bases for uses not specified in CWA Section 101(a)(2), including any sound scientific rationale on which water quality criteria are based
- Information on general policies that may affect the application and implementation of WQS
- Use attainability analyses (UAA) for all waters not classified as fishable/swimmable, as required by 40 CFR 131.10(j) (UAAs may or may not touch on the supporting water quality criteria)
- A record of public participation, including public comments made and your responses to comments

In addition, your EPA regional office, in consultation, as appropriate, with the Fish and Wildlife Service and/or the National Marine Fisheries Service, will review your WQS to ensure, consistent with the federal Endangered Species Act, that they protect federally listed endangered or threatened species that may be present within the tribe's boundaries. The two Services and EPA will work cooperatively with your tribe to address concerns about protecting endangered or threatened species. For more information on this process, consult the Endangered Species Act implementing regulations at 50 CFR Part 402 and the Memorandum of Agreement between EPA, the U.S. Fish and Wildlife Service, and the U.S. National Marine Fisheries Service (published in the Federal Register on February 22, 2001, 66 Fed. Reg. 11202-11217), available online at http://www.epa.gov/ost/standards/esa.html.

Your EPA regional office may request additional information. Check with the appropriate EPA Regional WQS Coordinator to determine if you should include anything else in your submission.

7. Understanding EPA's WQS Review Process

After you submit adopted WQS, EPA reviews them, assessing whether:

- You have adopted water uses that are consistent with CWA requirements and criteria that protect the designated water uses
- You have followed your legal procedures for revising or adopting standards
- Your tribal standards are based on appropriate scientific and technical data and analysis
- You meet the submission requirements discussed above in section II.6

EPA's regional offices review WQS with assistance from the WQS Branch at Headquarters, if necessary. EPA uses the same regulatory requirements when reviewing tribal standards as when reviewing state standards.

If the submitted WQS meet the regulatory requirements in 40 CFR Part 131 and Part 132, EPA will approve them. If some or all of the provisions fail to meet these requirements, EPA will notify you and specify the necessary changes.

a. Approved WQS

If EPA determines that you have met all appropriate requirements and approves your WQS, the appropriate Regional Administrator (RA) or other designated regional official will notify your tribal chair and the tribal agency responsible for the WQS program through an approval letter. If EPA approves only a portion of the standards you submitted, the RA will provide information on the sections that need modification in this letter.

b. Disapproved WQS

If your standards do not meet the requirements of the CWA and EPA's regulations, the appropriate EPA RA or designee will notify you and specify the necessary revisions. It is EPA policy to encourage tribes to work with their appropriate EPA regional office in making such revisions. If a tribe does not adopt the changes specified by EPA within 90 days after notification of EPA's disapproval, EPA shall promulgate such standards pursuant to Section 303(c)(4)(A) of the CWA, which provides that EPA is to "promptly prepare and publish proposed regulations setting forth a revised or new [WQS]...if a revised or new [WQS] submitted by such [tribe]...is determined by the Administrator not to be consistent with the applicable requirements of the [CWA]."

8. Understanding EPA's Dispute Resolution Process

Section 518 of the CWA requires EPA to establish a mechanism to resolve any unreasonable consequences that may arise as a result of differing WQS set by states and tribes located on common bodies of water. This mechanism is promulgated at 40 CFR 131.7. Either a state or a tribe may request EPA involvement in a dispute, in which case the RA, if appropriate, will work with the parties in an effort to reach an agreement. The RA may include other parties besides the tribe and state (e.g., permittees, landowners) in the dispute resolution process. EPA may use mediation, nonbinding arbitration, and the Agency's default procedure to resolve disputes.

To resolve disputes through mediation, the RA may appoint a mediator to facilitate discussions between the state and the tribe. Under nonbinding arbitration, the RA may appoint an arbitrator or panel of arbitrators to work with parties and recommend a nonbinding solution to EPA. Under the default procedure, EPA will review all available information and issue a recommendation for resolving the dispute.

For more information on EPA's dispute resolution process, see section 1.7 of the *Water Quality Standards Handbook*.

III. Mature Program Activities

1. Implementing WQS

Many of the CWA's mechanisms for protecting water quality rely on WQS as the foundation for water quality-based decisions. For example, WQS can be used to develop NPDES permit requirements, and WQS serve as a basis for identifying impaired waters under the CWA. WQS are also used as a basis for tribes (or EPA where a tribe is not administering the WQS program) to protect water quality from upstream discharges. For example, if an upstream permit applicant proposes a discharge that cannot ensure compliance with applicable CWA water quality requirements of downstream affected tribes, that discharge is prohibited under the CWA. They are also a basis for assessing and reporting on water quality biannually under Section 305(b) of the CWA.

In addition, WQS are important for programs other than those associated with the CWA. For example, under EPA's Superfund program, water quality standards promulgated pursuant to the CWA are generally considered "Applicable or Relevant and Appropriate Requirements" (ARARs) that must be attained or waived during Superfund remedial actions. See EPA's *CERCLA Compliance with Other Laws Manual*, EPA/540/G-89/006, Interim Final, August 8, 1988, http://www.epa.gov/superfund/resources/remedy/pdf/540g-89006-s.pdf.

If regulation-based actions are not enough to attain WQS, or NPS are the principal sources of pollution, you may also rely on your NPS control program to reduce the NPS pollutant load. Chapter 5 contains more information on developing and implementing NPS control programs.

2. Implementing Section 401 Certifications

Once you have received EPA approval for your WQS, you may want to consider developing a comprehensive set of Section 401 certification implementing regulations to maximize your control over the certification process and to make your decisions defensible in court. The language of Section 401(a)(1) of the CWA is written very broadly with respect to the activities it covers. Any federally licensed or permitted activities that may result in discharges into navigable waters require Section 401 water quality certification. This includes, but is not limited to, the construction or operation of facilities. The purpose of the certification is to ensure that no license or permit is issued for any activity that could become a source of pollution though inadequate planning or otherwise. Carefully considered Section 401 certification regulations can be very effective in conserving water quality and in ensuring that you apply all appropriate criteria to every certification decision. Some considerations to include in your Section 401 certification implementing regulations include the timeframe for review, application requirements, permit fees, and basis for decisions.

Section VI of EPA's 1989 *Wetlands and 401 Certification: Opportunities and Guidelines for States and Eligible Indian Tribes* contains more information on these considerations, and is available online through the Office of Water's Online Publication Web site, http://yosemite.epa.gov/water/owrccatalog.nsf/. Appendix D of that document also contains some example certification conditions.

After you receive WQS and Section 401 certification program authorization, entities must apply for and obtain certification from your tribe before obtaining a federal license or permit for any activity that may result in a discharge that may affect water quality on your reservation. When evaluating applications from these regulated entities for Section 401 certification, you should consider all potential water quality impacts over the life of the project (e.g., direct and indirect, short and long term, upstream and downstream), as well as impacts resulting from construction and operation of the facility when making your decision.

If your tribe has received an application for 401 certification for an activity that may affect the water quality of a downstream jurisdiction, you may wish to notify EPA. When an activity requiring 401 certification in one tribe or state will have an impact on the water quality of another tribe or state, EPA will notify any other tribe or state with water bodies that could be affected by the decision after receiving notice of application from a federal permitting or licensing agency within 30 days of the date of notice. EPA will also notify the licensing or permitting agency and the applicant. If within 60 days after receipt of such notification, other affected states or tribes determine that issuance of the permit will affect the quality of their waters so as to violate any water quality requirements of the state or tribe, and notify EPA and the licensing or permitting agency in writing of their objections, the licensing or permitting agency will hold a hearing at which EPA will submit its evaluation and recommendations on the proposed permit. The licensing or permitting agency must then condition the permit or license to ensure compliance with all applicable water quality requirements.

3. Assuming the Section 404 Program

To be eligible to assume the federal program, tribal programs must have TAS status for the Section 404 program. In addition, to assume the program, tribes must develop a wetlands permit program no less stringent than the federal program and submit an application to EPA. The tribal program must meet the requirements in CWA Section 518 and 40 CFR 233.60-233.61.

While tribes can assume the Section 404 program for all surface waters on tribal land, the U.S. Army Corps of Engineers (the Corps) retains jurisdiction for Section 404 permits for certain waters as provided in CWA Section 404(g)(1).

If a tribe wishes to regulate jurisdiction over these “Section 10” waters and adjacent wetlands (Section 10 of the Rivers and Harbors Act), it must either develop a parallel permit program with the Corps or assume a State Programmatic General Permit (SPGP) with the Corps. If a tribe develops a parallel permit program, a permittee would need to receive a permit from the Corps and from the tribe for activities in these waters. An SPGP is a type of general permit founded on an existing state, local, or other federal agency program and designed to avoid duplication with that program.

When tribes assume administration of the Section 404 program, the Corps no longer processes Section 404 permits in waters included within the tribal program. Instead, your tribe would assume responsibility for the program, determine what areas and activities are regulated, process individual permits for specific proposed activities, and carry out enforcement activities. Tribes may issue general permits in addition to individual permits. Note that there are regulatory requirements that apply to general permits issued by the tribe. More information about Section 404 permitting is available from http://www.epa.gov/owow/wetlands/facts/fact23.html and http://www.epa.gov/owow/wetlands/pdf/reg_authority.pdf.

4. Conducting Triennial Reviews

EPA's regulations require that a tribe's WQS approved under the CWA be reviewed at least once every 3 years, and revised if necessary. You must hold a public hearing when any element of a WQS is modified or changed, and the public hearings must meet the same requirements as the public hearings held during standards development (discussed in section II.3 of this chapter). Prior to the hearing, you must make any proposed revisions, including supporting analyses, available to the public. When you begin activities to revise or adopt new standards, you should consult with your EPA Regional WQS Coordinator.

Remember that you must re-examine water bodies or segments with designated uses that do not meet the fishable/swimmable use to determine if any new information or technology has become available that would make fishable/swimmable uses attainable. In addition, if designated uses for any water bodies are less than those uses currently being attained, you must revise your standards to reflect the uses attained. You must also review any variances you have granted and decide whether to issue new variances.

Change in use designation requires that you consider the need for a change in criteria. If a use is removed, the criteria developed to protect that use may be deleted or revised. If a use is added, you will need to develop adequate criteria to protect the use.

See chapter VIII of the *Reference Guide to Water Quality Standards for Indian Tribes* for more information on conducting triennial reviews.

During triennial reviews, you can also establish procedures for identifying and reviewing standards on specific water bodies in detail. These water bodies are likely to be those where: water quality-based permits are scheduled to be issued or reissued; CWA goals are not being met; toxics have been identified and may be precluding a use or posing an unreasonable risk to human health; or potential impacts on threatened or endangered species may exist. See section 6.1.4 of the *Water Quality Standards Handbook* for more information on identifying and reviewing specific water bodies.

When revising standards, you must review all available information to determine whether the discharge or presence of a toxic pollutant is interfering with or likely to interfere with the attainment of designated uses of any water body segment. If so, you must adopt water quality criteria for that toxic pollutant sufficient to protect the designated use (40 CFR 131.11(a)(2)).

You should consult with the appropriate EPA Regional WQS Coordinator before you begin this process. For information on EPA's review process, see section 6.2 of the *Water Quality Standards Handbook*.

5. NPDES Program Overview

The NPDES program is a cornerstone of the CWA. The program regulates the discharge of pollutants into the waters of the United States by means of permits issued to industrial, municipal, and other point source dischargers. Across the United States, more than fifty categories of industry (including several hundred thousand businesses) and the nation's network of more than 16,000 municipal sewage treatment systems are required to comply with standards implemented in NPDES permits. These permits remove billions of pounds of conventional pollutants and millions of pounds of toxic pollutants each year. Today, more than 400,000 facilities are required to have NPDES permits. EPA regional offices currently issue and enforce NPDES permits in Indian Country.

If your tribe has EPA-approved WQS and wishes to use the NPDES program to regulate point source discharges based on your standards, you will find helpful information in the pages that follow. However, if your tribe has EPA-approved WQS, you are not required to seek NPDES program authorization. The process for tribal authorization of the NPDES permitting program is similar to the WQS authorization process and is described below. However, the elements that must be in place prior to tribal authorization are considerably more complex than those required for other CWA programs, such as WQS or Section 319. These requirements are found at 40 CFR Part 123.

EPA's *NPDES and Sewage Sludge Program Authority, a Handbook for Federally Recognized Indian Tribes* (EPA 833-B-94-004) contains more information on the NPDES program for tribes. You may download the Handbook from http://www.epa.gov/owm/rmes/tribalcwas106_app-e.pdf. You can also visit EPA's NPDES Web site at http://cfpub.epa.gov/npdes/index.cfm for general information and links to guidance, regulations, and training information.

6. Sources Regulated under the NPDES Program

Pollutant discharges may come from direct and indirect sources. Direct sources discharge wastewater directly into a receiving water body; indirect sources discharge wastewater to a publicly owned treatment works (POTW), which in turn discharges into the receiving water body. Under the national program, NPDES permits are issued only to direct point source discharges. The primary focus of the NPDES permitting program is individual permit issuance for municipal and industrial direct discharges. The NPDES program has other components, such as general permits, pretreatment programs, the industrial stormwater program, the construction stormwater program, confined animal feeding operations, and biosolids. If you would like more information on these components, visit EPA's NPDES Web site (http://cfpub.epa.gov/npdes/index.cfm).

- **Municipal Sources**: Municipal sources are POTWs that receive primarily domestic sewage from residential and commercial customers. Larger POTWs also typically receive and treat wastewater from industrial facilities (indirect dischargers) connected to the POTW sewerage system. The types of pollutants treated by a POTW always include conventional pollutants (e.g., human wastes, ground-up food from sink disposals, laundry and bath waters) and may include nonconventional pollutants (e.g., nutrients such as nitrogen and phosphorus) and toxic pollutants (e.g., pesticides, solvents, dioxin, lead, silver, mercury, copper) depending on the characteristics of the commercial and industrial sources discharging to the POTW. The treatment provided by POTWs typically includes physical separation and settling (e.g., screening, grit removal, primary settling), biological treatment (e.g., trickling filters, activated sludge), and disinfection (e.g., chlorination, UV, ozone). Some older POTWs have the additional concern of combined sewer overflow (CSO) systems that can release untreated effluent during storms. CSOs were an economic way for municipalities to collect both sanitary sewage and stormwater and are controlled under the NPDES program. A number of municipalities have municipal separate storm sewer systems (MS4s) that are also subject to NPDES requirements.

- **Nonmunicipal Sources**: Nonmunicipal sources, which include industrial and commercial facilities, have unique products and processes. At industrial facilities, the types of raw materials, production processes, treatment technologies, and pollutants discharged vary widely and depend on industry and facility characteristics. The operations at industrial facilities are generally carried out within a clearly defined plant area; thus, the collection systems are typically less complex than those for POTWs. Examples of nonmunicipal commercial sources include concentrated animal feeding operations, which are required to obtain NPDES permits to control runoff of nutrients and manure, especially in non-agricultural areas, and the construction stormwater program.

7. Understanding NPDES Permits

A permit is a license for a facility to discharge a specified amount of a pollutant into a receiving water, subject to certain conditions. Pollutant limitations are based on the more stringent of technology-based or water quality-based requirements. Permits may also authorize facilities to process, incinerate, send to a landfill, or beneficially use sewage sludge. The two basic types of permits that can be issued under the NPDES program are individual permits, which are tailored for particular facilities, and general permits, which are developed and issued to cover multiple facilities within a single category. If your tribe has many facilities of the same kind or that have certain elements in common, a general permit may be appropriate. A general permit can help you ensure that similar facilities are subject to consistent conditions.

Photo Courtesy of EPA Great Lakes National Program Office, National Park Service, Indiana Dunes National Lakeshore.

A tribe's WQS serve as a basis for establishing water quality-based effluent limitations for facilities with NPDES permits that are discharging to those reservation waters covered by the standards. Most facilities with permits issued by EPA that could be affected by a tribe's WQS probably have been operating with technology that has satisfied the WQS set outside the reservation. Whether the facilities will need to undertake different or additional pollution control measures when their NPDES permits are reissued will depend in part on any differences between the tribe's and state's WQS, and on EPA's technical procedures in applying the two sets of standards.

An NPDES permit contains effluent limitations (e.g., restrictions on the amount of specific pollutants that a facility can discharge into a water body) as well as monitoring and reporting requirements to ensure compliance with the effluent limitations. You can find more information on NPDES permits in EPA's *NPDES Permit Writer's Manual* (EPA 833-B-96-003), available online at http://cfpub.epa.gov/npdes/writermanual.cfm?program_id=45.

8. Reviewing Permits

As noted in section III.3, you must hold public hearings to review applicable WQS and modify or adopt standards, if necessary, at least once every 3 years. During your tribe's triennial review, tribal staff responsible for administration of the NPDES program should revisit any variances that have been granted. If the conditions that necessitated the variance still apply, no permit modification need be made. Otherwise, the permit containing the variance should be modified to reflect the new circumstances.

9. Considering NPDES Program Authorization

Before deciding to pursue NPDES program authorization, you should consider all the benefits and costs associated with it. You may want to consider:

- Tribal interest in furthering autonomy and self-determination
- The role the tribal program plays in the protection of tribal interests
- The abilities of your tribal program (i.e., whether your program has the organizational ability to develop and maintain a permitting authority)
- New tribal statutes or regulations you will need to manage the NPDES program
- Costs associated with expanding your regulatory role and ability to protect public health and the environment
- The infrastructure necessary to implement the program
- Your ability to support this type of program for many years

If you plan on seeking NPDES program authorization, you should contact your EPA regional office to discuss the process. The regional office can help guide you through the application process.

10. Developing Capabilities for Permitting, Compliance, and Enforcement

You must have the ability to implement all portions of an NPDES program, including writing permits, tracking compliance, and enforcing permit conditions at the time of approval (40 CFR 123.23(a)). To help you meet this requirement, you should consider training engineers and permit writers. EPA offers various training courses and workshops that explain the regulatory framework and technical considerations of the NPDES permit program. These courses are designed for permit writers, dischargers, EPA officials, and other interested parties. Updated information about courses and workshops is available on the Internet at http://cfpub.epa.gov/npdes/outreach.cfm?program_id=0&otype=1.

The extent to which permit writers are involved in monitoring, compliance, and enforcement activities will depend on the size of the organization set up by your tribal program. In smaller programs, a single individual or a small group of individuals may be responsible for all activities. In larger programs, individuals may specialize in different functions, so that the permit writer, while aware of the general activities of the permittee, may not be as closely involved with monitoring, compliance, and enforcement as are the individuals who specialize in each of those activities.

EPA has issued a number of guidances for permit writers that contain information on developing, issuing, ensuring compliance with, and enforcing NPDES permits. You can find general guidance and documents related to specific permit types online at http://cfpub.epa.gov/npdes/pubs.cfm?program_id=0.

11. Preparing for NPDES Program Authorization

a. Developing Tribal Code and Obtaining Approval from the Tribal Government

You will need to follow your tribal mechanisms to develop any necessary legal authority required to administer the NPDES program. Section II of chapter 6 includes some general considerations for developing tribal code and obtaining approval from your tribal government. Consult this section for more information.

Remember that you should work with your tribal attorney general or equivalent office during this process to produce tribal code that meets tribal as well as NPDES program requirements. You should also work with your tribal council to make sure you cover all applicable tribal requirements for adoption of your NPDES program.

b. Inventorying Existing Point Sources

Typical point source discharges come from POTWs and industrial facilities. The NPDES program does address certain types of agricultural activities (e.g., concentrated animal feeding operations), but the majority of agricultural facilities are defined as nonpoint sources and are exempt from NPDES regulation. You should coordinate with the existing (state or federal) permitting authority on your reservation to make sure that you have a complete list of all municipal and nonmunicipal point source dischargers currently regulated by NPDES permits.

c. Establishing Sources of Funding to Run the NPDES Program

In obtaining authorization for an NPDES program, your tribe will have to consider whether it is willing to commit to the long-term financial support of the program. The decision to ask for authorization will have environmental and economic consequences over many years. The tribe must determine whether it has (or plans to obtain) the revenue to hire and train the staff needed to run the NPDES program. You may be able to collect some funding through program and permit fees, but you may need additional dedicated tribal appropriations or other sources of EPA funding to fully support your program. Your EPA regional office may be able to help you locate sources of additional funding. A portion of your Section 106 grant could be used to support a NDPES program, but there is no separate CWA funding program for state or tribal permit programs.

12. Obtaining NPDES Program Authorization

As with obtaining eligibility for the standards program, you must meet basic requirements to be eligible for TAS under the NPDES program (40 CFR 123.32). You must be recognized by DOI, and you must demonstrate existing substantial governmental duties and powers, defined authority over water resources, and tribal capacity to administer the program. Remember that if you have already met any of these requirements, you may have to submit only information not submitted previously or resubmit information that is no longer current.

As established in 40 CFR 123.32, your application for eligibility for TAS for the NPDES program must include:

- A letter from your tribe to EPA requesting authorization
- A complete program description, explaining program operation and covering, for example: routine administrative procedures; a list of agencies responsible for administering the program; a list of staff members associated with the program; an analysis of the workload with estimates of administrative and technical costs for the first 2 years of the program; a description of sources of funding for the first 2 years of the program; copies of sample permits, applications, and reporting forms; and descriptions of applicable tribal regulations or laws that address procedures for permitting, administrative and judicial review, compliance, and enforcement
- Copies of applicable tribal statutes and regulations
- A signed memorandum of agreement (MOA) with the EPA RA concerning cooperative program responsibilities among federal, state, and tribal entities
- A certification from the tribal attorney general (or equivalent) that your tribe has adequate legal authority to administer the program

In evaluating whether your tribe is capable of implementing an NPDES program in a way that is consistent with the CWA and applicable regulations, EPA will consider:

- Your tribe's previous management experience
- Environmental or public health programs that your tribe currently administers
- Existing mechanisms to carry out the executive, legislative, and judicial functions of tribal government
- The relationship between the entities that will be regulated and the agency of the tribal government that is designated as the primacy agency
- The technical and administrative capabilities of the staff responsible for administering and managing the program

13. Working with EPA to Transition from Federal to Tribal Implementation

The transition from a federal to a tribal NPDES program will be laid out in the MOA between EPA and the tribe. Upon approval of a tribal program, EPA will suspend the issuance of federal permits for activities covered by the tribal program. After program approval, EPA will retain jurisdiction over any permits (including general permits) that it has issued unless your MOA with EPA calls for you to assume responsibility for them. The same applies if a state was the authorized permitting authority prior to tribal program approval. The authorized state will retain jurisdiction over its existing permits unless your MOA calls for you to assume responsibility. During the transition from a federally administered NPDES program to a tribally administered NPDES program, tribal staff should work with EPA to identify and review existing permits and establish mechanisms for tribal permit implementation.

14. Conducting Public Outreach

You should meet any public notification requirements particular to your tribe that are associated with NPDES permits prior to and after program authorization. Consult your tribal attorney general or equivalent officer to see if any public participation requirements apply.

In addition, the NPDES administrative procedures require that the public be notified and allowed to comment on NPDES permit applications. Once you assume authority for the NPDES program, you will be required to provide public notice and allow for comments on NPDES permit applications in accordance with federal regulations. See 40 CFR 124.10-124.12 for more information on public comments requirements.

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Chapter 8: Reporting

Introduction

As noted in the introduction to this guidance, one of this document's goals is to make it possible to aggregate data in a way that allows EPA to begin to assess national results associated with the Section 106 Tribal Program. Establishing consistent reporting requirements and data formats across all tribal water quality programs is the first step in aggregating and using the data to make statements about tribal water quality nationwide. This chapter discusses the annual Assessment Report that tribes will have to submit as a requirement of their work plan for their Section 106 tribal grants.

The Assessment Report consists of three components: a description of your monitoring strategy, a water quality assessment, and electronic copies of water quality data. It is different from progress reports required under the grant. Progress reports help your EPA regional office ensure that you are meeting your work plan objectives and project schedule. See section I.13 of chapter 3 for more information on progress reports. The Assessment Report contains information about water quality on your reservation and will help EPA begin to compile data that demonstrate national results for the Section 106 Tribal Program. EPA will also use the data provided in the Assessment Report to understand national trends and overall water quality. Tribes are critical partners in helping to develop this national picture. See appendix A for more information on what to include in your Assessment Report.

In addition to helping EPA assess national results, the elements required in tribal Assessment Reports provide a foundation to tribes for assessing water quality for reservation waters. The assessments will allow tribes to compare water quality data over time and serve as tools to help tribes make informed decisions about their program's future.

Some tribes already submit 305(b) water quality reports and other types of assessments. However, greater consistency among these reports is needed to assess water quality on a national scale. This document is intended to provide guidance on reporting that will lead to greater consistency among tribal reports and ultimately allow EPA to demonstrate environmental results for the Section 106 Tribal Program.

The reporting requirements outlined in this chapter reflect EPA's minimum reporting expectations for tribes. Tribes that currently collect and report more than the minimum required elements should not reduce their efforts to the minimum but continue to collect and report additional elements of interest to their programs.

Reporting Requirements

While EPA expects tribes able to do so to report on all of the parameters discussed in this chapter, it is understood that labor and financial contraints, relevant parameters, and other factors will vary among tribes. Individual reporting requirements will be determined on a case-by-case basis by EPA regional offices. A specific reporting requirement may be waived, for instance, if it can be demonstrated with data collected by the tribe or another entity that a required parameter does not affect a specific water body, or that the reporting requirements would cause an undue economic hardship.

In selecting tribal reporting components, EPA has attempted to balance tribal non-disclosure issues with EPA's goals of documenting national results for the Section 106 Tribal Program and assessing water quality nationwide. Certain information may be protected from release. For example, confidential business information, some personal privacy information, and limited other tribal information may be exempt from disclosure under the Freedom of Information Act (FOIA) or special provisions worked out at the regional level. There are also significant technological challenges associated with reporting raw data directly to STORET, and many tribes do not have the resources to meet those challenges. On the other hand, EPA has an obligation to demonstrate results for the Section 106 Tribal Program and to understand conditions on Indian reservations in sufficient detail to make effective decisions at a national level. The Agency believes the reporting requirements presented in this chapter reflect a compromise between tribal data sensitivity issues and EPA data needs, take resources available for water quality monitoring into account, and reflect the goals outlined in AIEO's Tribal Leader Letter on Tribal Data Access (see appendix C for a copy of the Letter).

The diagram below is a summary of the reporting requirements for the Section 106 Tribal Program.

Summary of Reporting Requirements for the Section 106 Tribal Program

Item		Description
1. Description of Your Monitoring Strategy		A description of the needs, goals, and objectives you have identified, as well as a full of description of the methodology and parameters sampled within your monitoring program.
2. Water Quality Assessment		A narrative account detailing the types of water sampled, sampling procedures, and resulting data summaries. The summary report must also include the tribe's interpretation of the data and the assessment methodology used.
3. EPA's Nine Basic Parameters Submitted in an Electronic Format		
Fundamental Monitoring Parameters	1. Dissolved Oxygen	DO testing kits and multi-parameter probes are readily available on the market.
	2. pH	pH testing kits and multi-parameter probes are readily available on the market.
	3. Water Temperature	Thermometers and multi-parameter probes are available from laboratory supply stores.
	6. Turbidity	Turbidity data should be collected in lakes and reservoirs using a Secchi disc method, probes, or meters. In streams, turbidity should be collected using a turbidity tube, kits, probes, or meters.
Intermediate Monitoring Parameters	4. Phosphorus	While total phosphorus data is preferred, ortho-phosphorus data is acceptable. Ortho-phosphorus may be measured using kits, probes, or contract laboratories.
	5. Total Nitrogen	Total nitrogen should be reported separately as the sum of total Kjeldahl nitrogen (TKN), ammonia, and nitrate-nitrite.
Mature Monitoring Parameters	8. Macroinvertebrates	Multiple monitoring methods are acceptable.
	7. E. coli or enterococci	Samples can be measured with a market kit and an incubator or sent to a laboratory for analysis.
	9. Basic habitat information	For each reach, include existing streambank erosion, existing hydrologic modification, stream bottom characteristics, and land use patterns near sampling sites.

Reporting Requirements

As a grant requirement for continuing to receive Section 106 funds, tribes must submit to their EPA regional offices annual tribal Assessment Reports that consist of the three components listed below. Tribes, however, will not be required to upload their raw data into STORET. EPA expects that all tribal data will be uploaded into STORET, but recognizes that in many cases the burden for data management will lie with EPA regions or EPA Headquarters. When tribes have approved Section 106 work plans, they will be required to submit the assessment in accordance with their approved work plan. In some instances (e.g., when a tribe can demonstrate through its own data or data collected by another entity, such as a state or watershed council, that a required parameter does not affect a specific water body or when the reporting requirements would cause an undue economic hardship), EPA may waive specific reporting requirements. Unless EPA has waived specific reporting requirements for your tribe, you must include all the elements listed below in your assessment:

1. **A description of your monitoring strategy**. If you have followed the procedures outlined in this guidance, you already should have developed a monitoring strategy, and you may have included it as part of your QAPP (See section I.1.a of chapter 4 for more information on developing a monitoring strategy.) As stated in chapter 4, characteristics of monitoring strategies will vary from tribal program to tribal program based on program goals and objectives, the level of program sophistication, and resources available. The complexity of the strategy you describe will depend on the sophistication of your monitoring program. Your strategy description can vary in length as long as you adequately describe a program that meets your data and information needs and considers future needs. If you have a monitoring strategy in place, you do not need to develop a new monitoring strategy to meet this requirement. Tribes will be allowed to report strategies they already have developed using Section 106 funds or other funds. Information on strategies is included in appendix A. This requirement will help EPA measure success towards subobjective 2.2.1 of the National Water Program Tribal Targets for FY 2005-2008, "protect and improve water quality on a watershed basis," in particular the monitoring component of that target, "number of tribes that currently receive EPA funding that have developed comprehensive monitoring strategies." Understanding existing water quality is a key step in protecting and improving water quality. Comprehensive monitoring strategies help tribes understand existing water quality conditions.

2. **A water quality assessment**. This narrative and graphical account should include your assessment of water quality. Assessments will vary based on the tribal program's sophistication. A tribe just beginning to implement a water quality program might submit a short assessment covering only a single year of monitoring results, while a tribe with a more advanced program might submit a more detailed and complex assessment that is based on several years of monitoring and includes GIS maps. At a minimum, the assessment must include summary information on the types of water sampled (e.g., rivers, lakes, wetlands, ground water), including the total extent (acres, miles) on the reservation and the total extent assessed, numbers of samples taken, and the complete set of parameters for which samples were collected. For the parameters discussed below, the summary report must also include mean/median values, the range of concentrations found, a threshold against which comparisons are being made, and the number of sampling locations (or miles of streams, acres of lakes, etc.) for which samples were above or below (as appropriate) the threshold value. EPA encourages tribes to provide this information for all parameters, including the minimum nine parameters. The summary report must also include the tribe's interpretation of the data and the assessment methodology used. If the tribe has EPA-approved WQS or tribally adopted standards, or has otherwise assigned designated uses to its waters, this report should include a summary of the number of stream miles, lake acres, etc. that are meeting designated uses, not meeting designated uses (i.e., impaired water bodies), or are unassessed. More advanced tribes should also consider including a table of water body-specific assessment information. (Information on assessments is included in appendix A.) This requirement will also help EPA measure success towards subobjective 2.2.1, in particular the strategic target showing water quality improvement in tribal waters.

3. **Electronic copies of surface water quality data for nine basic parameters (submitted in a STORET-compatible format)**. This requirement will (1) ensure that tribes formulate their water quality assessments using consistent parameters, (2) provide EPA with data to assess water quality on Indian reservations at a national level, and (3) prepare tribes for submitting data to STORET, a possible grant requirement in future years. Although tribes are encouraged to report all data they collect, tribes are required to report only the nine basic parameters listed below. These parameters will enable EPA to make national comparisons and assess the health of all tribal waters. EPA believes that most tribal monitoring programs already include most of these nine basic parameters. Many tribes will not need to conduct additional monitoring to collect these parameters. In some cases, one or more of these requirements may be waived by EPA. For instance, if your tribal program has determined that pathogens are not a concern in your water bodies and you have data to support this determination, your EPA regional office may waive the pathogen monitoring requirement. While EPA recommends monitoring for these parameters biannually, individual monitoring requirements will be negotiated between individual tribes and the appropriate EPA region on a case-by-case basis.

You may submit electronic copies of your water quality data via e-mail or on a CD-ROM or floppy disk. EPA strongly encourages tribes to submit additional parameters to EPA in this STORET-compatible format. Standard templates for data reporting will be developed through coordination among EPA Headquarters, EPA regional offices, and tribes, and will be available through EPA regional offices before tribes begin implementing the reporting requirements outlined in this guidance. For more information, see the text box titled "QAPPs and Monitoring" on page 4-4.

Although all tribes are encouraged to report data for all required parameters even if that data is reported elsewhere (such as in state 305(b) reports), as well as any additional parameters for which the tribe has monitored, tribes' abilities to monitor and report on some of the parameters may vary. EPA recognizes that it will not be possible for all tribes to begin collecting information on all nine parameters immediately. EPA understands that lack of resources and training may prevent some tribes from collecting and reporting data for all parameters. EPA has classified each of the nine parameters as fundamental, intermediate, or mature based on the level of complexity required by the monitoring and reporting activities associated with that parameter. EPA regions will use these classifications as guidelines in determining reporting requirements for each tribe, but ultimately will decide which parameters a tribe is required to report on a case-by-case basis. In situations where tribes cannot monitor for all nine parameters, EPA regional offices and tribes should negotiate ways to build tribal capacity (e.g., training, technical assistance, purchase of laboratory equipment) so that the tribe ultimately can collect information on all parameters. The nine parameters are:

Fundamental Reporting Parameters

1. Dissolved oxygen

2. pH

3. Water temperature

4. Turbidity

Intermediate Reporting Parameters

1. Phosphorus. Total phosphorus data is preferred, but ortho-phosphorus data is acceptable.

2. Total nitrogen. Total nitrogen data should be reported separately as the sum of total Kjeldahl nitrogen (TKN), ammonia, and nitrate-nitrite.

Mature Reporting Parameters

1. Macroinvertebrates

2. *E. coli* or enterococci

3. Basic habitat information. For each reach (i.e., stream segment), you must include the basic habitat information listed below in your report:

   - Existing streambank erosion
     a. Undercutting bank
     b. Widening channel

   - Existing hydrologic modification
     a. Dams or water restriction structures
     b. Drainage pipes into stream
     c. Diversion of stormwater into stream through culverts or pipes
     d. Burying of streams in pipes
     e. Bridge abutments
     f. Rerouting stream channel

   - Stream bottom characteristics
     a. Soft muddy bottom
     b. Firm sandy bottom
     c. Hard rocky bottom

   - Land use patterns near sampling sites
     a. Forested
     b. Pasture/crops/open land
     c. Wetlands
     d. Residential
     e. Commercial/industrial
     f. Roads/highways
     g. Construction underway
     h. Cleared right-of-ways

Tribes should use analytical methods consistent with 40 CFR Part 136 or other approved alternate test procedures, as documented in a tribe's approved QAPP. Each of these nine parameters is discussed in detail in section I.1.b of chapter 4.

The nine parameters described in this chapter reflect the minimum monitoring expectations for tribal water quality programs. Tribes that are currently monitoring additional parameters should not curtail their current monitoring programs. In addition, as less experienced tribal programs begin to develop expertise, EPA expects that these tribes will begin to incorporate additional parameters.

Data Formatting and STORET

As noted in chapter 4, STORET is a repository for water quality, biological, and physical data that can be used by tribal and state environmental offices, EPA and other federal agencies, universities, private citizens, and many other organizations to assess water quality across the nation.

Each sampling result in STORET is accompanied by appropriate metadata (section I.2.a of chapter 4 contains more information on metadata). These metadata allow other users of the data to put them in their proper context when using them. You can visit http://www.epa.gov/storet/index.html for more information on STORET. Sample metadata templates will be available from your EPA regional office.

Currently, there are limitations to using STORET. In addition, tribes must be trained on STORET to submit data. Although several tribes report data to STORET, EPA recognizes that technical limitations prevent many tribes from reporting their data via STORET. EPA is working to address this issue and create simpler mechanisms (i.e., a Web-based interface) to allow users to submit data. **Until this update to STORET is completed, EPA will not require tribes to report data directly into STORET**. Tribes that already report data are encouraged to continue to do so. At this time, all tribes should focus on assembling data sets that include adequate metadata and are in a STORET-compatible format. Properly formatted data are not only a Section 106 requirement, they are also a key component of effective data management. As discussed in chapter 4, you will need properly formatted data sets to use your data as effectively as possible. Properly formatted data will allow you to make valid comparisons among water bodies, use data for purposes besides those for which you originally collected the data, and ensure that the data remain useful as personnel changes. Tribes that wish to submit data may do so through one of several options:

- **Run a local copy of STORET or access a hosted version**. You can run a local copy of STORET to record your results. EPA can provide translation formats for upload to the national STORET database, but your tribe must either run a local copy of STORET or have access to a hosted version of STORET to use this option.

- **Use a contractor with STORET experience to upload STORET data**. Several tribal programs have used contractors to upload their data into STORET. Other tribes in your region may be able to provide you with information about contractors they have used to do this. This option does not require tribes to use specialized software packages, but may require them to pay software licensing fees and setup costs.

- **Provide water quality data to EPA via a CD, DVD, or diskette.** Tribes can save the data they have collected onto a CD-ROM, DVD, or diskette and arrange to submit it to their EPA region for STORET upload.

EPA recognizes that it will not be possible for all tribes to begin to report data in a STORET-compatible format immediately. In situations where tribes cannot report data in a STORET-compatible format, EPA regional offices and tribes should negotiate ways to build tribal capacity (e.g., training, technical assistance) so that the tribe can ultimately store and report data in a properly formatted electronic file.

Where feasible, EPA encourages all tribes to submit all their data to STORET. Not only will the data help EPA build a comprehensive picture of water quality, but tribes will have free access to an offsite storage site they can rely on if their data are lost.

Appendix A: Assessment Reports

As described in chapter 8, tribes receiving Section 106 grants are required to submit an annual Assessment Report consisting of the following three components:

1. A description of your monitoring strategy
2. A water quality assessment
3. Electronic copies of surface water quality data for nine basic parameters

The information to be included in each component of the report is described below, along with suggested formats for your report.

I. Monitoring Strategies

A tribal monitoring strategy is simply an implementation plan that describes how a monitoring program will serve tribal water quality management needs and address tribal waters over time. It should be comprehensive in scope (i.e., addressing all water body types within tribal boundaries) and it should identify the issues and needs that are currently impediments to an adequate monitoring program. An adequate monitoring program should include the following:

- Water quality indicators (WQI) and/or other parameters to be monitored
- Monitoring frequency for each WQI and parameter
- Monitoring sites
- Monitoring data use and display

See section I.1 and II.2 of chapter 4 for more information on WQI and other parameters, monitoring site selection, and monitoring data use and display.

The requirements for tribal water monitoring strategies are described below in three tiers for fundamental, intermediate, and mature tribal water quality programs. EPA anticipates that over time, all tribal monitoring programs will advance to the highest level practical. The tribal strategy should be reviewed regularly to determine if goals are being achieved and if the tribal monitoring program is advancing toward maturity.

Example Monitoring Objectives

- Initial ground water monitoring conducted under the previous grant period indicated the presence of nitrates and nitrites within shallow ground water. The tribe has implemented management measures to lower total nitrogen levels. The tribe will continue monitoring at existing ground water locations to assess the impact of the management measures.
- Our tribal waters are experiencing significant eutrophication, but we do not have existing surface water data. We will conduct monitoring of the two lakes on our reservation to determine the extent of the problem and use the results to attempt to determine possible causes.
- Waters on our reservation are pristine. Our monitoring strategy will aim to maintain and protect our excellent water quality and attempt to identify any potential causes of concern or possible sources of pollution.

1. Monitoring Strategies for Fundamental-Level Tribal Programs

A monitoring strategy for a tribal program at a fundamental level of development should include the following:

Monitoring Objectives — This should be a narrative describing the major goal(s) and measurable objectives of the monitoring program. These objectives may include identifying water quality problem areas, tracking trends over time, or identifying NPS impacts.

Monitoring Design — The strategy should describe the tribe's approach for selecting sampling sites that best serve its monitoring objectives. Fundamental monitoring programs will most probably be designed using a fixed station design to begin to locate problem areas.

Core Water Quality Indicators (WQI) — The strategy should define the core set of WQI that will be monitored (for fundamental programs, temperature, pH, DO, and turbidity are required parameters, as described in chapter 8). The strategy also should identify any supplemental indicators the tribe may choose to monitor.

Quality Assurance — A Quality Management Plan (QMP) and Quality Assurance Project Plan (QAPP) must be developed and approved to ensure the validity of monitoring and laboratory activities. The QAPP should reflect the level of quality that is appropriate for the specific uses of the data. EPA guidance on developing QMPs and QAPPs is available at http://www.epa.gov/quality. See the introduction to chapter 4 for more information on QAPPs.

Data Management — The strategy should describe how tribal data are stored in an electronic data system that can be used to manage tribal data and is in a format that will allow data sharing with EPA. Data collected on the four core indicators and metadata (date, time, location, etc.) should be managed electronically. EPA Headquarters will work with tribes and EPA regional offices to develop a standard format for data reporting, including metadata. Standard templates will be available through EPA regional offices before tribes begin to implement the reporting requirements outlined in this document. See section I.2 of chapter 4 for more information on metadata.

Data Analysis and Assessment — The strategy should describe the tribe's assessment methodology — how data collected will be compiled and analyzed to make assessment decisions. Assessments should address whether water quality is attaining available standards or criteria. If the tribe has EPA-approved WQS, the methodology should use them for determining attainment. If the tribe does not have EPA-approved WQS, the methodology should use one of the following sets of alternative standards or criteria:

- Tribal standards adopted and submitted to EPA, but not yet approved by EPA.
- Tribal standards adopted under tribal law for application solely under tribal law.
- Proposed or draft tribal standards prepared for use under either federal or tribal law, preferably consistent with EPA's guidance at http://www.epa.gov/waterscience.
- Standards adopted by an adjacent or nearby tribe state and approved by EPA for similar types of waters. The full text of each tribe's and state's EPA-approved WQS is available at http://www.epa.gov/waterscience/standards/wqslibrary/.
- EPA's recommended water quality criteria published under Section 304(a) of the CWA, adjusted for site-specific application in tribal waters. The recommended criteria are available at http://www.epa.gov/waterscience.
- EPA's recommended water quality criteria published under Section 304(a) of the CWA, without site-specific adjustment.

If any of the non-tribal standards approaches are used (i.e., the last three bullets above), the tribe would be free to apply all of the standards or criteria available, or to use selected designated uses and associated criteria depending on what needs to be protected for that tribe. Depending on the tribe and the waters, some designated uses and criteria may not be appropriate.

Reporting — The strategy should describe the tribe's procedures and protocol for preparing and submitting its annual tribal Assessment Report, which includes a description of the tribe's monitoring strategy, a water quality assessment, electronic copies of water quality data, and any other reporting needs identified by the tribe, in accordance with its approved grant work plan. Standard templates will be available through EPA regional offices.

Programmatic Evaluation and Needs Planning — The strategy should describe the process for conducting regular reviews of the tribal water quality monitoring program with the EPA region. These reviews will help determine how well the program is serving water quality decision needs. The tribe should also identify any current and future monitoring resources needed to fully implement a comprehensive program.

2. Monitoring Strategies for Intermediate-Level Programs

Monitoring Objectives — Similar to the fundamental level, this should be a narrative describing the major goals and measurable objectives of the monitoring program. The tribe should be considering CWA goals and objectives such as identifying problem areas needing protection. See section II.1 of chapter 4 for more information on updating monitoring objectives.

Monitoring Design — The strategy should describe the tribe's approach for selecting sampling sites that best serve its monitoring objectives. The tribe should consider several monitoring designs (e.g., rotating watersheds) to meet a broader range of monitoring objectives and to ensure comprehensive coverage of all water body types. See section II.1 of chapter 4 for more information on updating monitoring objectives.

Core and Supplemental WQI — The strategy should define the core WQI that will be monitored (in addition to the fundamental core parameter requirements, the intermediate level should include measurement of total nitrogen and total phosphorus). The strategy should also identify any supplemental indicators the tribe may choose to monitor to better meet its program objectives. Core and supplemental WQI are discussed in section I.1.b of chapter 4.

Quality Assurance — The strategy should describe protocols for expanding and refining the existing tribal QMP and QAPP to ensure the validity of monitoring and laboratory activities. The QAPP should reflect the level of quality that is appropriate for the specific uses of the data. EPA guidance on developing QMPs and QAPPs is available at http://www.epa.gov/quality.

Data Management — The strategy should describe how tribal data are stored in an electronic data system that can be used to manage tribal data and is in a format that will allow data sharing with EPA. Data collected on the six core indicators and metadata (date, time, location, etc.) should be managed electronically. Standard templates will be available through EPA regional offices before tribes begin to implement the reporting requirements outlined in this document. Section II.2 of chapter 4 has more information on data management for intermediate programs.

Data Analysis and Assessment — The strategy should describe the tribe's assessment methodology — how data collected will be compiled and analyzed to make assessment decisions. Progress toward tribal water quality objectives should be discussed. Section II.3 of chapter 4 has more information on data analysis and assessment.

Reporting — The strategy should describe the tribe's procedures and protocol for preparing and submitting its annual tribal Assessment Report, which includes a description of the tribe's monitoring strategy, a water quality assessment, electronic copies of water quality data, and any other reporting needs identified by the tribe, in accordance with its approved grant work plan.

Programmatic Evaluation and Needs Planning — The strategy should describe the process for conducting regular reviews of the tribal water quality monitoring program with the EPA region. These reviews will help determine how well the program is serving water quality decision needs. The tribe should also identify any current and future monitoring resources — such as staff and training, lab resources, and funding — needed to fully implement a comprehensive program.

3. Monitoring Strategies for Mature-Level Programs

Tribal water quality programs at the mature level should generally follow the guidance of EPA's *Elements of a State Water Quality Monitoring and Assessment Program* guidance. While not required, mature tribal programs are encouraged to submit 305(b) reports. Comprehensive, detailed reports are expected at this level. In addition to the six parameters required in the other two levels, tribal programs must add, at a minimum, reporting on macroinvertebrates, physical habitat, and *E. coli* parameters. Data should be managed electronically and provided to EPA on an annual basis in an accessible format.

II. Water Quality Assessment Report

Under this *Guidance on Awards of Grants to Indian Tribes under Section 106 of the Clean Water Act*, tribes are required to collect, assess, and report annually on water quality monitoring data that were gathered using EPA Section 106 funding. The tribal water quality assessment should contain a basic set of information presented in a consistent fashion, as described below. EPA expects that each tribe's water quality assessment will become increasingly comprehensive as its monitoring program matures.

1. Fundamental Water Quality Program

The major components of an Assessment Report for a tribe with a fundamental water quality monitoring program should include the following:

1. **An atlas table of tribal water resources**. This atlas should include the estimated number of stream miles, lake acres, wetland acres, or estuarine square miles on your reservation.

2. **A narrative description of tribal water quality monitoring programs and assessment methods**. Refer to chapter 4 for general information on developing a water quality monitoring program. Sections I.3 and II.3 of chapter 4 contain information on assessment methods. This discussion should include:

    - The purpose of the monitoring program (e.g., to identify problem areas, track trends over time, identify NPS impacts, address public health concerns)
    - The number of stream miles/lake or wetland acres/estuary square miles monitored
    - Parameters monitored
    - Monitoring frequency
    - Discussion of any applicable WQI, tribal goals and objectives, or standards
    - Coordination or collaboration with other organizations
    - Any lab support
    - How data are interpreted and managed

3. **Narrative description of results of water quality monitoring on your reservation**. This should include an interpretation and summary of the findings of tribal monitoring activities, including probable causes and sources of impairment. Tribes that are in the early stages of developing a monitoring program should consider conducting simple watershed surveys and/or stream or lake habitat walks to learn about potential sources of impairment to their waters. EPA's *Volunteer Stream Monitoring: A Methods Manual* contains field sheets and explanatory information on conducting watershed surveys and habitat walks. Section I.3 of chapter 4 contains more information on interpreting your monitoring results through data assessment and analysis.

4. **Brief narrative descriptions of issues of tribal concern**. This discussion should identify any issues of special concern, such as:

   - Outbreaks of waterborne disease
   - Fish kills
   - Fishing or shellfishing advisories
   - Restrictions on surface drinking water supplies
   - Restrictions on bathing

5. **Monitoring data, submitted electronically, for each assessed water body**. Latitude/longitude location of the sites monitored, the water body name, and the name of the watershed are integral parts of this information. Standard templates will be available through EPA regional offices.

2. Intermediate and Mature Water Quality Program

The major components of a tribal Assessment Report for an intermediate or mature program should include the following components. A standard format is provided below and is recommended for use by tribes.

1. **An atlas table of tribal water resources**. This atlas should include the estimated number of stream miles, lake acres, wetland acres, or estuarine square miles on your reservation.

Table 1
Atlas of Tribal Waters

Total number of stream miles	95
Total number of lake acres	250
Total number of wetland acres	140
Total number of estuary square miles	10

2. **Brief narrative descriptions of monitoring programs and assessment methods**. This discussion should include:

- The purpose of the monitoring program (e.g., to identify problem areas, track trends over time, identify NPS impacts, address public health concerns)
- The number of stream miles/lake or wetland acres/estuary square miles monitored
- Parameters monitored
- Monitoring frequency
- Monitoring network design (e.g., rotating basin, fixed station)
- Discussion of any applicable WQI, tribal goals or objectives, or standards
- Coordination or collaboration with other organizations
- Nature of laboratory support
- How data are interpreted and managed

Note: The table below shows a suggested approach for determining support of designated uses or tribal goals using the nine basic parameters for tribes with EPA-approved or tribally-adopted WQS. Tribes with WQI or tribal codes can use a similar approach.

Table 2
Making Assessment Decisions

Designated Use or Tribal Goal	Parameter(s) to be Measured to Determine Support of Use or Goal
Contact recreation/swimming/cultural uses	*E. coli* or enterococci, nitrogen, phosphorus
Aquatic life and wildlife	DO, temperature, pH, turbidity, macroinvertebrates, habitat, nitrogen, phosphorus
Drinking water	*E. coli* or enterococci, nitrates, turbidity
Shellfish/fish consumption	*E. coli* or enterococci

3. **Summary tables of the extent to which streams, lakes, and estuaries meet designated uses or tribal goals (including cultural uses of waters)**. Tribes should use WQI or EPA-approved or tribally-adopted WQS to determine whether streams, lakes, and estuaries meet designated uses or tribal goals.

Table 3
Use/Goal Support in Tribal Streams

Designated Use or Tribal Goal	No. of Stream Miles Monitored/ Assessed	No. of Stream Miles Fully Supporting Use or Goal	No. of Stream Miles Supporting Use or Goal but Threatened*	No. of Stream Miles Not Supporting Use or Goal
Swimming	50	40	5	10
Aquatic life	45	20	20	25
Cultural	30	30	5	0
Fish consumption	20	10	5	10

**Note: Threatened miles are a subset of those miles fully supporting the use or goal.*

For tribes whose monitoring programs are in the intermediate stages, assessment decisions should be made on the best available information. Mature programs should consult EPA's *Consolidated Assessment and Listing Methodology* (CALM) guidance, available online at http://www.epa.gov/owow/monitoring/calm.html, and *Elements of a State Water Monitoring and Assessment Program*, available online at http://www.epa.gov/owow/monitoring/elements/, for more information on making assessment decisions.

4. Summary tables of causes and sources of impairment.

Table 4
Causes of Impairment in Tribal Streams

Parameter	No. of Stream Miles Monitored or Assessed	No. of Stream Miles Not Supporting Use or Goal
E. coli	50	10
Dissolved oxygen	45	25
Turbidity	45	20
Habitat degradation	45	25

Table 5
Sources of Impairment in Tribal Streams

Source of Impairment	No. of Stream Miles Monitored or Assessed	No. of Stream Miles not Supporting Use or Goal
Hydrologic modification	45	25
Agriculture (livestock grazing)	45	30
Stormwater runoff	20	20
Unregulated septic systems	50	25

III. Monitoring Data, Submitted Electronically, for Each Assessed Water Body

Latitude and longitude of the sites monitored, the water body name, and the name of the watershed are integral parts of this information. EPA Headquarters will work with tribes and EPA regional offices to develop a standard format for data reporting, including metadata. Standard templates will be available through EPA regional offices before tribes begin to implement the reporting requirements outlined in this document.

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Appendix B: Requirements for Authorization of Tribal Administration of the WQS Program

Summarized below are some, but not all, of the requirements a tribe must meet in order to be authorized to administer a WQS program. A full statement of the requirements is contained in CWA Section 518 and regulations at 40 CFR 131.8(b). You are encouraged to consult your Tribal Attorney General or equivalent and the appropriate EPA Regional Administrator as you begin to develop your TAS application.

1. Tribe is federally recognized by the Secetary of the Department of the Interior. See "Further Information" below.	
2. Tribe has a governing body carrying out substantial governmental duties and powers	
Description of the form of tribal goverment	
Description of governmental functions being carried out	
Sources of tribal government's authority to carry out govermental functions	
3. WQS Program pertains to the management and protection of reservation water resources	
Map and/or legal description of area where tribe asserts authority	Where are the boundaries of the reservation areas over which the tribe asserts authority? Are there tribal trust lands? Are there non-member owned fee lands on the reservation?
Narrative statement describing legal basis of tribe's authority	Include description of authority over member and nonmember activities. Include description of authority over areas/waters covered by the application. Include a statement by the tribe's legal counsel that describes the tribe's authority over member and nonmember activities.
Obtain copies of imporant tribal documents	Constitution, codes, by-laws, charters, resolutions, executive orders, treaties, etc.
Identify surface waters where tribe proposes to establish WQS	What rivers, lakes, reservoirs, and wetlands are within the reservation boundaries? Map the important features.
4. Tribe exhibits capability to administer the WQS Program	
Desciption of the tribe's previous management experience	
List of existing environmental or public health programs administered by the tribal government	Copies of related tribals laws, policies, and regulations.
Description of the entities that exercise the executive, legislative, and judicial functions of goverment	
Description of the agency that will assume primary responsibility for the WQS program	
Description of the technical and administrative capabilities of the program staff	Alternately, describe how this capacity will be developed. The plan must also address how tribe will obtain the funds required to develop technical and administrative expertise.

Further Information
1. The DOI maintains a list of all federally recognized Indian tribes, which is published periodically in the Federal Register. The list can be found at www.doi.gov/bureau-indian-affairs.html.
2. Additional documentation may be required by the Regional Administrator to support a tribal application.

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Appendix C: Letter to Tribal Leaders on Information Access

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 14 2005

OFFICE OF
WATER

Dear Tribal Leader:

We are writing today to discuss an issue that is of importance to both the Environmental Protection Agency (EPA) and tribes. The issue concerns records, information, and data which are generated under an EPA assistance agreement and required to be submitted to EPA under the agreement. We wish to inform you of the Agency's position on this issue, to promote use of EPA's national data systems, and to discuss what, if any, legal protections may be available to exempt this information from release in the event EPA receives a Freedom of Information Act (FOIA) request for it.

On May 11, 2005, EPA circulated a draft tribal leaders' letter with a call for comments throughout Indian country by way of the Tribal Caucus of EPA's Tribal Operations Committee. These issues were also discussed with tribes in June at the National Tribal Environmental Management Conference in Traverse City, Michigan and prior to that in May at the River Network's 2005 River Rally in Keystone, Colorado. Thank you for the thoughtful comments EPA received. Enclosed is a Comment and Response document to provide a more detailed explanation of the information in this letter.

Be assured that EPA's primary purpose in collecting this information is to help us implement the purpose of the relevant assistance agreement. EPA awards assistance agreements to tribes to carry out various statutory and program goals established in the Federal laws that EPA administers. In addition, by obtaining appropriate environmental data and information from tribes, EPA can ensure that it has a long-term and complete record of tribal environments from which to make necessary decisions, allocate resources, direct efforts, and mark progress over time. Using EPA's national data systems also provides EPA and tribes the ability to understand the tribes' important positioning within air sheds and watersheds that cross tribal-state boundaries, and will allow all parties to work together to improve the environment and human health.

At this time when Congress and the President are requiring EPA to clearly demonstrate accountability and results from the financial assistance we provide to recipients, it is necessary for EPA offices to have this information available to make this showing. The Federal assistance agreements law makes clear that Federal agencies have full rights to information and data generated from activities financed by assistance

agreements. The American Indian Environmental Office (AIEO) supports making this information available. We believe that a lack of tribal information may hinder EPA's ability to justify and account for its programs in Indian country to the overall detriment of tribes.

Once information is obtained by EPA, any person may request a copy of the information through FOIA. FOIA contains nine exemptions from releasing records, but no specific restrictions preventing public access to tribal information in general. You should not assume that tribal information generated under an assistance agreement is automatically exempt from release. Certain information may be protected from release, for example, confidential business information, some personal privacy information, and limited other tribal information may be exempt from disclosure under FOIA.

Please be assured that EPA will continue to work closely with our tribal partners on a government-to-government basis to discuss EPA's program needs and ensure the appropriateness of our information collection requirements. We have heard many thoughtful comments regarding the need to protect tribally known sacred sites, medicinal plant locations, and particular species. In general such information is beyond the scope of EPA funded activities and would not be requested by EPA. AIEO will continue to emphasize to all EPA offices the importance of becoming knowledgeable about the effects that these requests have on tribal program capacity, the differences between working with states and tribes, and the overall sensitivity that the issue has in Indian country.

If you have any questions please contact me, Carol Jorgensen, Director, AIEO, at (202) 564-0303, or have your staff contact Jeff Besougloff, AIEO, at (202) 564-0292.

Sincerely,

Benjamin H. Grumbles
Assistant Administrator

Carol J. Jorgensen
Director
American Indian Environment Office

Enclosure

cc: Indian Program Policy Council
National Tribal Caucus

Tribal Information Access:
EPA responses to Tribal comments regarding
Tribal Leaders letter and conference presentations
September 2005

EPA's American Indian Environmental Office received written comments from five tribes and evaluated feedback at two meetings in response to the May 11, 2005, draft tribal leaders letter on Tribal Information Access from Carol Jorgensen, Director of EPA's American Indian Environmental Office. EPA had provided a copy of this draft letter to the Tribal Caucus of EPA's Tribal Operations Committee for wider distribution to tribal leaders for comment prior to the letter being finalized. Additionally, these issues were also discussed with tribes in June at the National Tribal Environmental Management Conference in Traverse City, Michigan, and prior to that in May at the River Network's 2005 River Rally in Keystone, Colorado. The comments are summarized and combined by topic from all comments received. All attempts were made to use the original commenting language.

STORET/Other Data Systems

Tribal Comment: STORET is a cumbersome and excessively time-consuming and nonuser-friendly database. Also, using the program is incredibly labor-intensive and will take away from time and grant money that could be used for more beneficial programs. Tribes find it unreasonable of EPA to require the use of this program to store data.

EPA Response: EPA is aware of the challenges involved in the use of STORET by tribal Clean Water Act Section 106 grant recipients and we have been working with tribes in several Regions to help facilitate submittal of tribal water quality monitoring data to EPA. Our Region 8 office has been working with tribes to load data into a copy of STORET hosted by an EPA contractor. Region 5 has been working with tribes on development of a simple Excel spreadsheet for use by tribes that can provide data in a consistent format that is readily accessible to STORET through the STORET Input Module (SIM) tool. EPA is currently embarking on the development of a new data management system (Water Quality Exchange, or WQX) that will free tribes and states from the burden of maintaining a local copy of STORET in order to submit their data to EPA. The Wind River Reservation is currently partnering with EPA in this effort. As we implement the Clean Water Act Section 106 tribal grant guidance, we will continue to work with tribes to implement better tools to manage water quality data and to submit that data to EPA.

Tribal Comment: The tribe is willing to use STORET if EPA is willing to input the data into the database for tribes.

EPA Response: In addition to the steps outlined in EPA's response above, some EPA Regional programs are exploring the feasibility of developing tools to facilitate the entry of entering tribal Clean Water Act Section 106 information into STORET in order to ease the resource burden on the tribes and EPA.

Tribal Comment: The tribe would be willing to use a workable database provided by EPA to replace STORET. The tribe opposes use of other databases (SDWIS, AQS, or any other) that operate similarly to STORET and take time and resources away from tribal priorities.

EPA Response: EPA is working to ensure that any data and information system used by tribal funding award recipients meets the needs of tribes as well as EPA. EPA recognizes that there may exist significant challenges to requiring tribal use of some EPA systems that were designed for input by non-tribal recipients and users. EPA is currently working with tribes to modify systems, such as the Air Quality System, to create a more tribal user friendly platform. EPA will continue to work with tribes to ensure that these challenges are recognized and resolved and that the need for data and information does not negatively impact tribes' ability to conduct other activities under the EPA award.

Tribal Comment: If issues regarding EPA positions on tribal data and information are not addressed, and data reporting becomes too costly and burdensome, then the tribe will have to consider pursuing other funding sources to implement its water quality program in a way that is consistent with tribal needs, goals, and priorities.

EPA Response: It is EPA's desire to strengthen its tribal program and tribal environmental programs to ensure the highest level of protection of human health and the environment in Indian country. To maintain and grow programs, EPA has identified a need for information that allows EPA to examine the effectiveness of its programs. At a time when all federal programs are being required to show results and positive benefits for the tax dollars spent, combined with decreasing federal resources for domestic programs, such self-examination is occurring in all federal programs. EPA is committed to working with the tribes to minimize the burden on the data providers as they implement the Clean Water Act Section 106 tribal guidance.

Consultation and Coordination by EPA with Tribes

Tribal Comment: Direct consultation needs to occur between EPA and tribal leaders before positions can be taken on general data and information issues and before a finalized Clean Water Act Section 106 tribal guidance is released.

EPA Response: EPA takes seriously its government-to-government relationship with tribes and its consultation and coordination obligations. The release of the May 11, 2005, draft tribal leaders letter on Tribal Information Access from Carol Jorgensen, Director of EPA's American Indian Environmental Office, is part of EPA's effort to consult and coordinate. These efforts will continue to occur. Related actions, such as finalization of the Clean Water Act Section 106 tribal guidance, will also receive the proper level of coordination and consultation.

Tribal Comment: The tribe questions the statement that there is a lack of tribal information regarding environmental quality in Indian country available to EPA. Tribes submit reports to Regional offices.

EPA Response: EPA lacks comprehensive national information in a number of media areas for Indian country. EPA Regional offices have worked very hard with tribes to develop the information necessary to allow EPA Regional Programs to operate and continue funding. There is an additional need for EPA to have an ability to make comprehensive national statements regarding the environment in Indian country in order to support and maintain the current program levels. With the exceptions of limited circumstances, this is not occurring. The information submitted, in various manners and forms, to EPA Regional offices is not able to be combined in such a way as to present a national picture of need, nor of the effectiveness of the work being performed in Indian country under EPA funding. A number of EPA programs are expected develop national data systems for their programs in the coming years. Tribal leaders can expect to see additional EPA activity regarding tribal data. This activity is likely to take the form of requiring information that can be used on a national level.

Legal Issues

Tribal Comment: There was no citation to the laws cited in the draft letter regarding access to data and information.

EPA Response: As a general matter a grant of federal funds subject to conditions which must be met by the grantee, creates a type of contract between the United States and the grantee. See, McGee v. Mathis, 71 U.S. (4 Wall.) 143, 155 (1866); Pennhurst State School and Hosp. V. Halderman, 451 U.S. 1, 17 (1981); Bennett v. New Jersey, 470 U.S. 632, 638 (1985). In carrying out its statutory grant authority, an agency is permitted to impose conditions on grantees who receive federal funds. Virginia Dep't of Educ. v. Riley, 23 F.3d 80, 87 (4th Cir. 1994). For example, EPA can impose grant conditions under the Clean Water Act which are related to the water quality goals of the Act. Shanty Town Associates Limited Partnership v. EPA, 843 F. 2d 782 (4th Cir. 1988).

Grant conditions not only include specific terms and conditions and applicable regulatory requirements, but also commitments made in a grant work plan. For example, EPA's tribal environmental program grant regulations provide that a complete grant application must meet the requirements in 40 CFR Part 31 and include a proposed work plan. 40 CFR 35.505. The work plan is negotiated between a tribe and the Regional Administrator and reflects consideration of national, regional, and tribal environmental and programmatic needs and priorities. 40 CFR 35.507(a). The work plan is "the basis for the management and evaluation of performance under the grant agreement" and must include "the work plan components to be funded under the grant" and the "commitments for each work plan component, and a time frame for their accomplishment." 40 CFR 35.507(b). Thus, if EPA is awarding a Clean Water Act Section 106 grant to a tribe for purposes of assessing tribal water quality, EPA has the authority to require in the work plan a commitment that the tribe submits to EPA water quality data collected under the grant.

Tribal Comment: To ensure the appropriateness of EPA policies regarding access to data collected by tribes under federal assistance agreements, EPA should consider all existing Federal statutes, some of which prohibit public disclosure of information. Limitations can be found in the Freedom of Information Act and the National Historic Preservation Act. The limitations should be utilized as much as possible to protect tribal information.

EPA Response: Under the Freedom of Information Act, a person may request any Agency record, including ones provided to EPA as part of a Federal assistance agreement. The requested record must be disclosed unless it is protected by one or more of the nine FOIA exemptions. Although FOIA does not contain a specific exemption to protect tribal-related information, such information may be protected under existing FOIA exemptions. Although several comments were received listing specific statutes that provide limitations on the disclosure of information under FOIA, most of these statutes have not been litigated, so their status as "Exemption 3" statutes is uncertain. Also, some of these laws appear to apply to information within specific agencies other than EPA.

Tribal Comment: STORET is a data warehouse that is available to the public. For such data systems EPA must enter into a Memorandum of Agreement (MOA) or a Plan of Action (POA) with each tribe in each Region to address issues regarding sensitive data.

EPA Response: The negotiated grant work plan contains any agreement regarding information requirements and data systems to be used under the funding award. No further agreement is required. EPA believes the issues of tribally-determined sensitive and cultural information warrants further discussion as these situations arise.

Tribal Comment: EPA's rights to access records of grantees under 40 CFR 31.42 (retention and access requirements for records), states in Section (f) that grantees do not have to allow public access and dissemination of records unless required by law.

EPA Response: The regulation cited, 40 CFR 31.42, provides EPA and the Comptroller General with the right of access to any pertinent books, documents, papers, or other records of the grantees and subgrantees which are pertinent to the grant, in order to make audits, examinations, excerpts, and transcripts. Under Section (f), a grantee is not required to give the public the same right of access to these financial and programmatic records, unless otherwise required by law. This right of access is in addition in any other rights provided to EPA by the grant agreement itself, such as the requirement that a recipient submit water quality or other environmental data to EPA. Nothing in this regulation limits EPA's authority to collect information through workplan commitments, as discussed above.

AIEO's Role in the Process

Tribal Comment: What role does AIEO play in this process?

EPA Response: AIEO plays an important role in developing EPA Tribal Program policies and in working with individual EPA Headquarters and Regional Offices on their activities with tribes. AIEO will continue to work with media specific offices - such as the Office of Water's Office of Wastewater Management on the incorporation of STORET use into tribal Clean Water Act Section 106 grants - to ensure respect for the government-to-government relationship and adherence to EPA's 1984 Indian Policy and its trust responsibility. AIEO has already begun discussions with EPA offices regarding the sensitivity of some tribal information and EPA's obligation to work with tribes to develop mutually beneficial solutions to any challenges. Through these efforts, AIEO promotes the concept of seeking holistic solutions across tribal-state political boundaries by including tribal concerns in national level discussions.

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